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■ Apple 14.1in iBook:

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■ Adobe Photoshop 7.0: It's Mac OSX aware, but Windows users have a serious decision to make.

■ Macromedia Flash MX: Flash 6.0 with new MX branding and a totally new look.

■ MS Visual Studio.net: If you create apps to run over a network or Internet connection, you'd better read this.

■ Iomega Predator CD-RW: It's shiny, supports USB 2.0, and burns a standard data CD in five minutes.

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126 GeForce4 HAS COME TO TOWN

If the GeForce 3 revolutionised the video card market, then there's a lot riding on the debut of the GeForce 4 Ti. APC looks at the key technologies and features, including the nFiniteFX II Engine, Accuviv Anti-Aliasing, Light Speed Memory Architecture, nView dual monitor setup, video encoding and more. There are also reviews of the new GeForce 4 cards – the Leadtek WinFast A170 and MSI 8861 GeForce 4 MX440 to see how they pass the APC Labs test.

130 WINDOWS XP

Digital Video enthusiasts: start your cameras. Windows XP has everything you need to get on with your Baz Luhrman production. Windows writer Serdar Yegulalp looks at XP's native support for DV functions, plus dishes the difference between Windows Movie Maker, Ulead Video Studio 6, MediaStudio Pro, Adobe Premiere 6.0, and MGI VideoWave 4 so you can make your own decision.

134 OFFICE

The installation CD for XP contains almost 100 input languages, which means your copy of Office can do many things with a multi-lingual tongue. Multi-language in this case means you can read, edit and create text in other languages. It also means you can choose the way your keyboard works, and usually includes a virtual native keyboard, meaning it works like a keyboard you would buy in that country.

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Palm Beaming. It's the best way to swap apps on the handheld, yet so many palmists overlook this feature. APC's resident Palmer David Flynn looks at what you can and can't beam, how to get around pesky limitations, jacking into mobile phones, using your Palm as a remote control for the tele, printing from the Palm.

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Smart menus mean you won't alienate users wanting to bookmark your beauty-rific Flash site. APC Flasher David Emberton looks at a very cool site that blends HTML and Flash just right. Then he rips off the code and shows you how to do it.

142 PHOTOSHOP

Colourise and accessorise, girlfriend, and you'll be all that and a bag of potato chips. Colourising a grey scale image is as easy as hitting the snooze button. But making it look believable is as hard as disguising your contempt for a Monday morning. Photoshopper Trevor Morris restores an old black and white pic and makes it glow in brilliant technicolour.

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Wow, what a month it has been at apcmag.com! After a much-deserved post-launch break, the apcmag.com Web team have been busy cranking out the latest features, reviews and all new Workshop columns for your online viewing pleasure. Many thanks for the tons of feedback we've received about the site. In coming months, we'll be looking to tweak it using some of your constructive suggestions.

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APC UPDATE

This month sees the birth of the APC weekly email. Inside the APC Update you'll find a roundup of the week's postings from apcmag.com and a site update on the competitions and exclusive promotions on offer. To sign up, head to www.apcmag.com and click on the APC Update link.

As always, the apcmag.com team welcomes your opinions. So please jump online and tell us what we can do to keep making apcmag.com a great resource for you.

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NEED TO LOAD WINDOWS GoZilla Free 4.1, ICQ 2001b 5.18, LimeWire 2.1.1, Trillian 0.71, Ulead WebRazor Pro 2.0 A11, Window Washer 4.1 **MAC** FontAgent 8.7.1, HTML Optimizer 5.7, iSpQ VideoChat 5.0.3, Jedit (PowerPC) 4.0.9r3, MP3 Rage 4.2.1, Render Boy (PowerPC) 2.3.1, Sound Studio 2.0.1, SwitchBack 3.6, Word Translator for Macintosh 4.5.1 **LINUX** Coffee Cup HTML Editor 4.1, Crimson Fields, Imici, KDE 2.2.2, Opera 6.0 Technology Preview 3, Space Tripper 1.6 **HANDHELDS** Arranger 1.31, Blitz 1.0, Calc! 1.4, Documents To Go Professional Edition 4.004, easySMS (Windows CE) 1.20, G-Prime (iPAQ/ARM) 1.2, JAF 1.4.01, Photogather for Palm OS 1.91, Travel Dictionary English (EPOC) 2.0, Ximply myList **REQUESTS** Power Defrag 2.00 Lite, SMS Sender 1.01 **TOOLKIT** Adobe Acrobat Reader 5.05, Aladdin Stuffit Expander 6.5.1, BitchX 1.0c18, Downloader for X 1.30, Eudora 5.1, FinderPop 1.9.2, Fresh Download 3.0, GKrellIM 1.2.8, GraphicConverter 4.2, ICQ 2001b v5.18 Build 3659, Interarchy 5.0.1, Licq 1.0.4, Palm Desktop 2.6.3, PowerStrip 3.12, ProZilla 1.3.6, RealPlayer 8.0 Basic, Sisoft SANDRA 2001te (5.8.11), smIRcle 1.0.1a25, TechTool Lite 3.0.1, Tex-Edit Plus 4.1.2, Toms Root Boot disk 1.7.361, Webmin 0.92, Winamp 2.78, Windows Media Player 7.1 for Mac, WinZip 8.1, WS_FTP LE 5.08, XMMS 1.2.6 **BROWSERS** Microsoft Internet Explorer 5.1, Microsoft Internet Explorer 6.0, Netscape 6.2.1, Opera 6.01

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SECURITY SPECIAL

Ad-aware 5.62, McAfee VirusScan 6.02, Norton AntiVirus 2002, Norton Internet Security 2002, PestPatrol, Spychecker 1.1, UC.2 2.0, UC.LAN 2.13, ZoneAlarm Pro 2.6.362

TECHLIFE

PC GAMES

Die Hard: Nakatomi Plaza, Shadow Force: Razor Unit, Warlords Battlery II

DIRECTX

DirectX 8.1 runtime



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Email cd@apcmag.com

Web www.apcmag.com/cd

Phone (02) 9288 9123

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NEED TO



EVO SO STYLISH

Looking for a new slimline PC? From the makers of the desktop-enhancing iPaq series of computers comes this ultra-slim unit. The new Evo D500 is Compaq's latest treat for the business desktop market. With a weight of only 5kg, Compaq claims the D500 is 75% smaller and 50% quieter than the average desktop PC.

The slick design houses a 1.3GHz Celeron processor and 512MB of SDRAM as standard. It also features a "modular drive system" and offers optional wireless LAN and Bluetooth modules. Pentium 4 models will be available from June.

Contact Compaq

Phone 13 23 93

Online www.compaq.com.au

Price \$1,395

AUTHENTICATE THIS

Following its Defcon 3 notebook bag alarm (see APC December, 2001, page 38), Targus has released yet another security device with mobile computing in mind. Called the Defcon Authenticator, this time around Targus has gone right for biometric-based security. The Authenticator is essentially a fingerprint scanner that connects via the USB port. It also doubles as a two-port USB hub.

Apart from making your notebook or PC more secure, the bundled SecureSuite software also eliminates the need for you to remember the myriad variations of passwords and usernames on your system. The Defcon Authenticator is compatible with Windows 98, ME and 2000.



Contact Targus **Phone** 1800 641 645

Online www.targus.com **Price** \$389

WILD RIDE

Hardcore motorcycle-sim fans can now experience their motocross or GP titles in all their glory with the FreeStyler Bike from Thrustmaster.

This is what steering wheels are to driving-sim fans, although it doesn't have force-feedback yet. The FreeStyler's setup accommodates both leaning and turning to suit the different styles of riding games. It also has attachments to make it a sit-on or deskbound controller, depending on your setup.

There are 11 buttons on the handlebars along with a four-way point-of-view hat, and it doesn't require drivers to run.

Connecting via plug-and-play USB, on the FreeStyler Bike you'll either look like a gaming pro or a loungeroom lunatic.



Contact Thrustmaster **Phone** (02) 8303 1818

Online thrustmaster.com.au **Price** \$149

KNOW



ROVER LIVE

Working for a start-up and need something to break the tension of those long nights and endless weekends? The Desktop Rover is just the ticket. The ROV part stands for Remote Operated Vehicle, which pretty much gives away what it does. Designed as an all-terrain radio controlled miniature vehicle (there's a reluctance on the distributor's Web site to use the word "tank") with caterpillar tracks, the Desktop Rover measures only 10cm long and is operated via a pocket-sized transmitter. If you have two of them, you can also set yourself and a mate up for a laser tag game — Rover-style. There is also an optional Wireless Video Camera module that turns the Rover into a "Telepresence" vehicle. How cool is that!

Contact Plantraco

Online www.plantraco.com

Price US\$59



BLAUPUNKT ROCKER

Here's a novel use for IBM's famed Microdrive hard disk. The biggest problem with having an MP3 player in your car is having the means to transfer all your MP3 files to your car. Blaupunkt has put together an extremely compact way to get MP3s into your ride without having to burn them onto a CD first. Using a 1GB version of the CompactFlash-sized Microdrive, the MDP 01 is an 8.5 x 13.5cm reader that plugs into Blaupunkt's Funline and Skyline head units. A USB reader is supplied for transferring the files onto the removable microdrive from your PC, as is software to rip your CDs into MP3 format. The capacity allows for about 18 hours of continuous playback, with a 2GB version to be released in the middle of the year.

Contact Blaupunkt

Phone (03) 9541 5555

Online www.blaupunkt.com.au

Price \$1,699



ALL-IN-ONE FUN

Cross a Pocket PC handheld device with a full-featured GPRS GSM mobile phone, and you start to get an idea of what the Siemens SX45 is about. Yet another company to jump on the all-in-one bandwagon, the SX45 is the latest in a series of attempts to get the wireless multimedia ball rolling on a handheld platform. Based around a 150MHz MIPS processor with 16MB of ROM and 32MB of RAM, the SX45 runs on Windows CE 3.0 and displays graphics through a 240 x 320 resolution colour screen. It also carries an MMC/SD and CompactFlash card slot for expansion. On the mobile phone side, it is a dual band 900/1800MHz GSM/GPRS handset with the usual WAP and phone book inclusions.

Contact Siemens

Phone 1800 622 414

Online www.ic.siemens.com.au

Price \$2,199



► Telstra bodies buried. Just like broadband really.

BROADBAND BLUES

**WHY YOU SHOULDN'T EXPECT
FAST, RELIABLE, INEXPENSIVE
INTERNET ANY TIME SOON.**

Tim Keown of Camperdown in Sydney prepares for his weekly Telstra routine. "Hi," he greets the phone jockey. "The ADSL network is down." It's always the same reply: "Yes, we know it's down. Yes, we're looking into it. No, we don't know when it'll be back . . . Try again later, if you like."

He can live with the crashes, the sluggish speed and the drop-outs (he got a month of free access and another two at half price), but the recent \$6 monthly price increase has him fuming. "It sucks that they can charge these prices and not improve services, but there's no cable where I live."

ADSL was meant to bring high-speed Net access to the masses by using Telstra's existing phone lines. It hasn't worked, says Gartner analyst Geoff Johnson, because Telstra is using a heap of non-standard infrastructure that keeps crashing the network. They're working to standardise their equipment, but it's still in the developmental stages. "These technical issues are going to take two years to work through."

Further delays upgrading the suburban telephone exchanges to support ADSL

mean only one in 50 Australians can get broadband. "If you live in leafy inner suburbs of Sydney and Melbourne you're fine, but elsewhere you're stuck." No glitzy ad campaigns mean fewer people sign up and Australia ranks 16th (and falling) among OECD countries. "Even customers who know what they want find it hard to get," says Johnson.

Choice is only slowly and painfully being introduced. As well as ADSL, Telstra owns the main cable and satellite networks and sets the terms for other ISPs who want to use the network.

Lee Brabazon of Darwin switched from Telstra for one of the new (and cheaper) ADSL providers recently granted permission to offer services over Telstra's network after two bumbling Telstra technicians almost wiped his PC. "The first guy couldn't install the network card or connect the modem (he asked to 'format' my PC) so he called another guy out. I ended up doing it myself in 20 minutes that night," says Brabazon. Over the next four months, he kept ringing to tell them the network was slow, but they just said, "No, everything is working fine."

Fine enough for Microsoft to dump a 50-page critique of Australia's broadband network at the feet of Communications Minister Richard Alston in February. Microsoft joined Cisco, Sun and the rest of us in requesting Alston to, please, do something to make broadband better.

Days later, Alston ordered his department to investigate deploying wireless broadband (the IEEE 802.11 standard) in the bush. Sounds great but, telecommunications analyst Paul Budde says, it's a smokescreen to cover the mess we're in now. Budde says, "exotic" wireless services are no alternative to reforming the existing network, which nearly everyone will depend on for the next 10 years. "ADSL is the only feasible technology up to 2005. It's our best option." He says, Telstra is genuinely committed to improving broadband, but only on their terms and making as much money as possible in the process. He argues everyone is stuck in an unworkable regulatory and public/private ownership framework.

The situation is so bogged down, a Telstra spokesperson seemed surprised to be asked about Telstra's problems and plans for ADSL. "Overall, we'll spend a billion dollars over a number of years on broadband. We're aiming for a million subscribers by 2005." Its long-term plan is to develop the residential cable network and direct businesses to ADSL.

But when will ADSL get better? "It's a new technology and we're still developing the network. There are some teething issues that we're getting on top of . . . ASAP," he promised.

Fiona Angus

SPOT THE FED

HACKING TRADE SHOWS HIT AUSTRALIA,
BUT JUST HOW DO YOU PICK THE POLICE
FROM THE SCRIPT KIDDIES?

Comb-over, a public servant trademark.

Dark shades. Ray-Bans are a giveaway.

*'Hip' lingo: "Yo G. What is up...dawg?"
Ahh, that comb-over in a gust?*

*Weak attempt at grunge stubble. We
know two-day growth when we see it.*

*Coffee?!? Where's the Jolt Cola
and NoDoze tablets?*

*Pressed clothes. This guy spends more
time at the drycleaners than online.*



It's called "Spot the Fed". You arrive at a hacking event, or "security conference" as they are known, and spend three or four fun-filled days fooling around with IT geeks and pizza-eating pranksters. But who are those dorky guys wearing the pressed pants and ironed T-shirts over in the corner? Something's fishy here.

The answer might be that they're law enforcement — the fuzz. In the US, you're likely to find FBI agents hanging around any number of hacking events, like Def Con or the Black Hat Briefings. In Australia, maybe it might be members of the Australian Federal Police Computer Crime Squad.

Our guide to Fed-spotting comes straight from one of the experts — author Suelette Dreyfus, who has spent years hanging out with hackers all over the world. In years

gone by, she says, computer cops stood out like a sore thumb. "They were the only ones in the conference who wore ironed T-shirts," she remembers, though these days they're just as likely to be hanging out with the geeks and freaks. Not all hacker hunters look like our fine friend pictured here, but who's to stop us having a bit of fun?

The next six months will see another wave of events devoted to hacking and data security. From March 19 to 21, security professionals and network gurus will descend on Hack 2002 in Sydney. Australia's data security incident response centre, AusCERT, kicks off a four-day event on the Gold Coast in May, then in August there's the massive Def Con hacking convention in Las Vegas.

To be fair, Australia's Hack 2002 is more of a suit-and-tie affair and the Fed's might

just blend in with the rest of the IT workers and business professionals. Still, you just never know when Fed-spotting skills might come in handy.

William Maher

DATES

Def Con 10: August 2-4, Las Vegas.

www.defcon.org

Hack 2002: March 19-21, Sydney.

www.hackexpo.com

AusCERT2002: May 19-22, Surfers Paradise.
conference.auscert.org.au

Ultimate Hacking: Hands On (training workshop) August 27-30 in Sydney, September 10-13 in Melbourne.

**www.esec.com.au/training/
foundstone.htm**



TOP DOGS

A custom-built Dell is fast becoming Australia's favourite computer, according to annual sales figures from Gartner. Australians bought 1.9 million computers in 2001, and although Compaq is still our most popular brand, Dell is poised to steal the crown. In a year marked by vicious competition and poor sales, everyone lost ground except Dell.

TOP 10 PC SALES

1. Compaq	241,118	(▼ 1%)
2. Dell	213,615	(▲ 4%)
3. IBM	172,179	(▼ 4%)
4. HP	144,764	(▼ 2%)
5. Toshiba	97,795	(steady)
6. Apple	73,900	(▼ 2%)
7. Acer	63,731	(▼ 1%)
8. Ipex	53,200	(steady)
9. NEC	49,845	(▼ 1%)
10. Gateway	30,880	(▼ 1%)



► Do you want fries with that?

STUCK IN FUD

MEET THE GUY WHO WILL MAKE YOU TRUST MICROSOFT. REALLY.

There's something about Richard Purcell that inspires trust. That open smile and easy manner, his casual clothes, even his long plait and receding hairline make you think of the peace-loving '60s when no-one had to worry about hackers and viruses and software monopolies. For the next hour, you bask in the warm glow of his absolute faith in Windows, Product Activation, Web services and start to believe Microsoft is your friend.

The Director of Privacy for Microsoft says he's here to dispel your FUD (fear, uncertainty and doubt). He's travelled to Sydney to evangelise Microsoft's "trustworthy computing" message. "Our goal is to give individuals control over their personal information." He looks you in the eye. "This is profound. It's a top priority." You can't look away. "Microsoft can't say these things and not deliver. People like yourselves are going to hold us to this."

If he can't win trust, then .NET won't work. Microsoft wants to organise your life and your data using Web-based applications so you can access it on any device, anywhere. "It's all based on trust," he explains. Trust that your data is accurate, trust that it's protected against hackers, trust that it's safe from Microsoft.

He pooh-poohs the "world domination" theory of Microsoft as an illegal purveyor of personal details. "We actually obey the law. It's naive to doubt that. The laws in Australia are very specific and we obey them." And the flaws in Windows XP and Internet Explorer? The plague of Windows viruses? The hole in MSN Messenger that revealed your nickname and buddy list?

"There are 100,000 hack attempts on Microsoft products every hour of every day. Once every six to eight weeks, one works," according to Purcell. "This hardly invalidates the entire platform," he adds. "There are no guarantees. In anything." Besides, it's going to get better — there are 7,000 programmers sifting through code nailing any flaws as he speaks. And Product Activation? "It's designed to stop



► And who really needs privacy if you haven't got anything to hide?

counterfeiters. People are victimised and end up with software that doesn't work." We have to trade some of our privacy for security. "Every time you increase security, you reduce privacy. Privacy allows people to be anonymous and that reduces accountability." Under the cloak of anonymity, "bad people" emerge.

You listen. You believe. You come home to discover the Windows Media Player you've just installed has created a secret log of every DVD and CD you've ever played and sent the data back to Microsoft. FUD.

Fiona Angus

SPAM JAM

There are 160 million Hotmail accounts filling with spam every day. How do these spammers track you down? Purcell calls them "dictionary attackers". He created 12 Hotmail accounts with different levels of character complexity. The account with a simple four-letter name was swamped with spam in 24 hours, but the account with a long combination of letters and numbers remains empty. The National Office for the Information Economy has set up its own gang of spam vigilantes to investigate the possibility of introducing anti-spam regulations.



WEB HOSTING

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all prices include GST

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Lite \$120/yr	5 MB		S	L															500 MB
Basic \$199/yr	20 MB	1	U	L	NT														1 GB
Plus \$275/yr	20 MB	15	U	L	NT														1 GB
SoHo \$399/yr	50 MB	30	U	L	NT														1 GB
Standard \$489/yr	100 MB	50	U	L	NT														2 GB
Heart \$599/yr	200 MB	75	U	L	NT														2 GB
Enterprise \$799/yr	500 MB	100	U	L	NT														3 GB



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- ✓ Customisable
- ✓ Secure

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UK domains (.co.uk, .org.uk)
Australian domains (.com.au)

\$20 / 2 years
\$110 / 2 years

Comparison with other web hosters as taken from their websites on 24 January 2002

Entry Level Personal Packages

Company	ilisys	Ozhosting	Commander	Net Registry
Package	basic	Standard	Bronze	The Promoter
Server space	20 MB	20 MB	20 MB	35 MB
Monthly transfers	1 GB	1 GB	500 MB	1 GB
Set up fee	-	\$53	\$59	\$99
Domain name fee	\$40	\$105	\$66	\$110
Annual cost	\$199	\$328	\$370	\$396
Total including GST.	\$239	\$486	\$495	\$605

Entry Level Enterprise Packages

Company	ilisys	Telstra	Ozhosting	Commander	Net Registry
Package	Standard	Economy	Custom	Silver	The Marketer
Server space	100MB	80MB	100MB	70 GB	50MB
Monthly transfers	2 GB	500MB	1 GB	750 MB	1.5 GB
Set up fee	-	\$89	\$53	\$89	\$99
Domain name fee	-	\$165	\$105	\$66	\$110
Annual cost	\$489	\$659	\$768	\$590	\$660
Total including GST.	\$489	\$913	\$926	\$745	\$869

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THE BIG SWITCH

GOOD EVENING LADIES AND GENTLEMEN AND WELCOME TO TELEVISION, INTERACTIVE STYLE. *FIONA ANGUS* CHECKS IT OUT.

Michael Fong arrives home from a day's work at Australia Post and his three children switch off the Cartoon Network and call him to come and play computer games — on the TV. "Come on Dad, let's play String 'Em In," say Carmen (13), Adam (11) and Felicity (7). For the next half an hour, they compete to empty a grid of letters by forming words. Dad wins. "I can always clear the screen but they haven't got a chance," he says.

Fong remembers the day a guy from Optus Pay TV came to their house in Forestville in Sydney, installed a new set-top box and gave him a three-hour lecture on how to surf the Internet with his remote.

"It's something way beyond just TV," he says as he types out an email on the infra-red keyboard and glances through the latest releases in the near-movies-on-demand catalogue.

The airwaves that have carried Australian television since the first broadcast of the 1956 Melbourne Olympics — the analog system — will be switched off in five years. Future TV will be broadcast in digital, with three times the resolution, multi-screen viewing, heaps of extra channels and tonnes of new information. Best of all, it gives the 50% of Australians who don't have a PC instant access to Net-style interactive services.

It would, that is, if the free-to-air networks hadn't made a deal with the Government to ban new digital broadcasters until 2008. Ever since, there's been barely any digital programming and the iTV dream has turned into a regulatory disaster. But others believe the future is digital and the future is now ...



THE PLAYERS

Veronica Chalom surfs through Austar's four interactive channels, pausing to read greetings children have emailed to Nickelodeon's *CatDog* show. As the head of Austar Interactive Television, Chalom is trying to "retrain" her viewers to use their TV for email, shopping, checking detailed weather data and TV guides by offering cute arcade games and demos. "The early games are purely to get people to use the up, down, left, right and OK buttons. That affects the way you navigate through all your services," says Chalom.

If you're one of the 20% of Australians who watch Optus, Foxtel and Austar pay-TV, you're halfway to the iTV dream. Pay-TV networks already broadcast in digital, and Optus and Austar have started to replace some of their 'dumb' set-top boxes with two-way devices. The Optus iTV set-top box has an always-on cable modem that plugs into the same hybrid fibre coaxial cable network that carries Optus@Home broadband Internet, but Austar is stuck with



► Austar iTV: the first interactive TV network in Australia

digital satellite, so when you send an email or buy steak knives from *Huey's Cooking Adventures*, your set-top box automatically dials up an ISP using a 56K modem.

Austar has been slowly but steadily introducing interactive services to its 300,000 regional viewers over the last two years. Chalom says viewers have been

cautious about using email and shopping. "What we're trying to do is take people on a journey through the different stages," she says. It's a strategy she developed in the first iTV user group working on the most successful commercial iTV rollout at BSkyB in the UK. "To suddenly be doing all these different things is a huge adjustment.

TRY ME

What does it take to see digital TV? You can tune into the limited broadcasts of the free-to-air networks by purchasing a set-top box that converts the digital signal to your analog TV set. But watch out, warns telecommunications analyst Paul Budde, the boxes on sale now could soon be white elephants. They don't support two-way interactive services, and even if they did, the networks only have an in-principle agreement to adopt a common operating platform for interactive services. Each pay TV network has separate and incompatible boxes, and in theory, the free-to-air could go the same way (that's one box for Ten, one for Seven, and so on). Budde says it's a lot safer to lease a box that comes with a pay-TV subscription. "If the box gets changed in a year, it's their box."

AUSTAR

The box Advanced Digital Broadcast "G3" with 56K modem
OS OpenTV
Price Packages start from \$42.80 per month (plus satellite installation fees); subscription games cost \$5 per month; and t-mail \$5 per month plus call charges. There is also a \$120 interactive services kit with infra-red keyboard.

OPTUS ITV

The box Pace Micro Technology with the first DOCSIS cable modem and infra-red keyboard
OS Liberate
Price Packages start from \$39.95 per month with a \$199 or \$399 installation fee.
(Special trial only available to some Sydney residents.)

FOXTEL

Undeveloped. "No comment," said a Foxtel spokesperson. There is potential to deliver iTV through Telstra's BigPond cable network and some satellite services.

10, 9, 7, ABC AND SBS

The box Now available in shops are the \$4,449 Sony widescreen digital TV set High Definition and Standard Definition; the \$899 DGTEC SD and HD; the \$699 TEAC SD; and the \$699 Thomson SD. About 15,000 boxes and 5,000 digital TV sets have been sold since January 2001.
OS No two-way interactivity. The open standard MHP platform is promised for future boxes.



► *The ABC's Sarah Dabro produces a broadband show alongside her regular TV work*

If you take away the comfort of watching TV in your living room, you've lost the game."

THE DRAMA

Austar is in danger of losing the game if it can't give iTV viewers something to watch. The killer iTV application — movies-on-demand — is a touchy subject for the struggling company. "The deals that the studios are asking for are a huge commitment. Either they reduce the price or the networks bargain together." Austar has spent \$17 million on the first drama made for iTV, a 13-part whodunnit called *Fat Cow Motel*. She hopes it can mimic the raging success of what emerged last year as the ultimate interactive television show. "*Big Brother* showed how people love to

interact and have a voice."

Big Brother will have iTV features in the future, says Aaron Pedersen, general manager of the interactive division of Southern Star Endemol, which produces the show. Until then, interactive drama for the upcoming second season will be delivered through live Web streaming from every camera in the house. The on-demand service is managed by a special Web crew based inside *Big Brother*'s Dreamworld studio and was a hit among broadband users during the first season. "On the Web, I have control over what I watch, I can listen to conversations and get more story development — it's much more in the raw."

About 50,000 Australians registered to watch *Big Brother* last year, and it was the most visited single-purpose Australian Web site ever. This season, he's considering a premium subscription service. "We actually find that people use one medium as their main source and supplement it with another," Pedersen says. "It's a multi-platform event. People access the site two or three times a day to grab a quick fix of *Big Brother*." He believes only the Web can

make it an in-depth 24-hour experience. "That's something you can't get on a half-hour TV show." iTV won't replace that either, he says.

THE RATINGS

Since the free-to-air networks have tuned out of digital TV, it's not surprising that audiences are turning to the Web to watch interactive video, says telecommunications analyst Paul Budde. "We could see up to 25% of people using the Internet for interactive television rather than the television." Can't bear to sit through an entire footy match? Then watch the good bits on Telstra's streaming AFL channels. The ABC adapts its TV shows for both the Web and iTV. ABC Broadband executive producer Ingrid Spielman says the service can deliver interactive television right now to every Australian over high-speed Internet.

The team of three work in the same office as the iTV unit. "There's always that tension with convergence. Do you go TV or Internet?" Spielman says. "Right now, there's room for both." Her sites consistently rate among Australia's top 10.

The two music and the Kids channels passed their trial period late last year and she's working on a new lifestyle channel ("fingers-crossed" for education and comedy). They take and edit the broadcast-quality digital betacam tapes using Avid DV Express, transfer the compressed video files to the streaming video server, publish on ABC's inhouse templates and deliver in Real Video format. "In one sense there's nothing new and I'm not ashamed to admit that. People can still go to TV and get it. This is about on-demand."

The weekly production cycle starts in their downstairs studio. Mixie the Rabbit arrives and they shoot a hello and goodbye for her show and a special email segment using a Sony MiniDV camera. Fly presenter Sarah Dabro also takes time out from her TV work to produce a broadband segment. Each session takes about 15 minutes. It's efficient, but Spielman can never reach that elusive half of the population that don't have a PC. After all, eight out of 10 people watch TV or listen to the radio every day for fun, but only 8% of men and 4% of women use their PCs in their leisure time. The idiot box wins every time. ■

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LOCKED OUT

HAD A RAW DEAL? STUCK WITH A LEMON? WATCHDOG TAKES UP THE FIGHT FOR YOUR CONSUMER RIGHTS.

When Gateway closed down all its outlets outside the US late last year, there were about 200,000 Australians and New Zealanders left holding valid warranties. At the time, Gateway promised *Watchdog* it would continue to support existing customers, yet its treatment of two *APC* readers (see *APC* November, page 48) just before the collapse didn't inspire us with much confidence.

Sure enough, another reader asked *Watchdog* to tackle Gateway's post-collapse support services.

Dear *Watchdog*,

It seems Gateway Australia has a problem with refunds and a problem with its (now defunct) Client Relations Team. A few days before it officially went out of business, I placed an order for five sets of speakers. They called about a month later and said they couldn't supply the speakers any more and a refund was underway. It wasn't. After eight telephone calls to their client relations team, I am no closer to a refund, despite receiving a personal promise that I would have my money in two weeks. The last time I called I was told that I was not on the "list" for a refund. Have they been lying to me all this time?

Bradley Wren
Clayton, Vic

This 23-year-old PC enthusiast and IT support worker couldn't resist the \$500 discount on the Boston Acoustic five-piece digital multimedia mega-systems.

Now he is terrified he will never see his money again.

The Gateway staff *Watchdog* had previously dealt with had all lost their jobs and moved to greener pastures. There was no answer at reception, only a recorded voice directing us to accounting firm Ernst & Young. A manager in its Corporate Finance Restructuring division, Andrew Sallway, was busy tying up the leftovers of Gateway's Australian business. He said Bradley's problem was outside the scope of his assignment, but agreed to look into the matter.

"As you know, Gateway is winding up its business in Australia. Because of the systematic retrenchment of staff, the refund was passed from person to person and fell through the cracks. It's just one of those things," he said. Two weeks later, Bradley opened a nondescript envelope and found a cheque from Gateway. No explanation or note; just a cheque. What had happened? Andrew had left us the contact details of someone at Datacom, the company subcontracted to handle customer service for Gateway in Australia. *Watchdog* put Bradley's case to Datacom and asked if they could



explain what happened. We never heard from them again.

Just as *Watchdog* was about to give up, Sam Weiss, the vice-president of Gateway Asia, called. He had just received a long and confusing email that had been passed around to so many inboxes, he needed time to work out what was going on. He said it looked like Andrew had fast-tracked the refund, but was adamant that he could get to the bottom of the matter and reassured *Watchdog* that Gateway's customer support services were on track. He explained that Gateway has a US\$30 million contract with Vsource to support existing customers for the next three years, but that "the ultimate responsibility lies with Gateway".

When *Watchdog* spoke to Sam again he said that because the last Gateway stock was offloaded in large-scale firesales, there had been a traffic jam in its inventory. "Mr Wren ordered five sets of speakers as we were shutting down. It happened as we reached the end of our inventory and there was some misinformation as to what was available. When you're down to the last thousand speakers with a thousand orders, someone misses out." He apologised to Bradley on behalf of Gateway.

It was one of his final actions as vice-president of Gateway Asia. "It's my last day," he said. Like all the other staff, he'd been made redundant. "Gateway has done an admirable job exiting the market. It's fulfilled all its obligations to customers and creditors." ■

CONTACT US

WE WANT TO KNOW

how IT companies are really treating you. Write to: watchdog@apcmag.com or PO Box 4088, Sydney NSW 1028. Include your full contact details and any product information. All correspondence becomes the property of APC and is subject to editing.



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HOW TO CONTACT US



TELSTRA FURY

Furious and shell-shocked readers overloaded our inbox with protests about Telstra's decision to raise the price on its broadband and dialup services.

I've just received an email from Telstra informing me that I must sign up for a 12-month contract or pay an extra \$4 per month for my BigPond account. What a nerve! I'm not taking this from Telstra and I hope your readers will not put up with it either. One of the things that keeps ISPs up to scratch is our ability to hop to another service provider. If enough customers hop to another provider, Telstra will have to think again.

Paul Heymans
Fernvale, Qld

Telstra has just increased the price of our BigPond cable account by \$27.65 per month. My children depend on broadband to access homework on their

school's intranet. Without it, they would be severely disadvantaged. We currently pay \$60.30 per month (and that's with discounts for being loyal customers) on the so-called Freedom plan, which was recently capped at 3GB. Now we are expected to pay \$87.95 for the same plan. Telstra seems to be squeezing us simply because we have nowhere else to go. The ACCC should be doing all it can to protect consumers from this kind of monopoly situation.

John Tomasin
Mill Park, Vic

We asked Telstra to respond.

The new broadband plan structure continues Telstra's move to a more equitable "pay for what you need" principle for customers. The previous model of offering fixed-rate plans was not commercially viable, given that Telstra's cost of providing the service is variable with the volume of data usage. As a result of some customers being very heavy users, continuing to offer fixed-rate plans was not commercially sustainable for Telstra. So Telstra decided that the most equitable approach to pricing was to offer plans with different download levels at different prices, rather than simply increasing the fixed rate for all customers. The higher download level plans cost more than the lower download level plans. This structure has enabled Telstra to introduce new plans at the lower usage end which are cheaper than those which were offered by Telstra previously. Telstra's new pricing structure provides the majority of BigPond cable and ADSL customers with the opportunity to save on their monthly bills. Most BigPond customers are currently on the Freedom plan and Telstra's data shows that the

majority of BigPond customers use less than 1GB per month. A new 1GB plan has been introduced which is cheaper than the existing price of the 3GB plan (see usage calculator www.bigpond.com/home/support/tools/usagcalc). It should also be noted that BigPond customers with cable services will have unrestricted download speeds under the new plans, compared to a capped speed of 256 or 512 kilobytes per second under the old plans.

Telstra has made the first major changes to dialup plans since the dialup service was introduced back in 1996. Overall, the changes simplify the choice for customers and offer what Telstra believes are even more competitive plans for light users. As from 1 March 2002, Telstra's existing 13 dialup plans will be reduced to four. The Telstra BigPond Essential Plan will be replaced by the Telstra BigPond Internet Frequent Plan. Customers have the option of keeping the current price of \$24.95 per month by entering into a new 12-month contract for the service. Alternatively, customers can pay a little more for the service and maintain the flexibility of not having a fixed-term contract for the service at the new price of \$28.95 per month. Telstra believes that this pricing structure remains very competitive in the market place.

Stuart Gray
Corporate Affairs, Telstra

DREAM MACHINE

With all the talk of design enhancements to PCs (APC March, page 52), I can't help building my dream PC in my head. Sure, it would be fantastic to have a PC with a detachable monitor that also doubles as a notebook, but why stop there? The docking station could have a second processor and hard drive, as well

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Dell Precision™ 340 shown with optional flat panel monitor

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as another soundcard and video-card ports (such as VGA, TV out) for gaming. Then you could mix and match your choice of DVD drive and CD-R drive in the notebook and docking station. Sounds like a pretty good setup to me.

Evan Markby
Tomago, NSW

A+ FOR EFFORT

As a university student, I was grateful to see the efforts of some software companies to provide their products to students at special discounted prices (*APC* February, page 14). This is surely a win-win situation for all: we don't have to spend a fortune to buy legitimate software while the companies get more customers.

Mustafa Baskan
Meadow Heights, Vic

NOT ALONE

I was so pleased to read the article on Dell's call-centre staff (*APC* February, page 19) and discover I'm not the only one who has difficulty understanding their English. I just laugh when I hear they're number one for service. I try not to ring any more, although I did send an email asking for information on how to buy a new PC, but I never got an answer.

Pat Colyer
Leeton, NSW

LONG LIVE MP3

After the music industry's victory over Napster, it seems they are phasing in a new copy protection system on music CDs. This system contains a set of false instructions which CD players ignore but prevents the disc being played on computers. Michael Jackson's new album was the first (though only on pre-release promotional copies to prevent bootleggers selling copies before its official release). Do they actually think this will stop MP3 sharing? It won't stop piracy — it will just stop legitimate users from enjoying the product they just paid good money for. When is this all going to end?

Sharon Russell
Port MacDonnell, SA

THE FRIENDLY PENGUIN

After reading your massive and interesting Linux article (*APC* February, page 118), I was reminded why I moved to Linux 12 months ago. The article provides great information for potential migrants, but I disagree that Mandrake Linux is a more powerful and complex flavour of Linux. This was the first Linux system I tried and it was, and still is, the most user-friendly and simplest to learn. It's easier than Red Hat and I recommend it to newcomers as it omits most of Linux's complicated options. Red Hat should be considered as a second step, before moving to Slackware or Debian for power users.

Christopher Garber
Kedron, Qld

MERRY UPGRADER

As a good corporate citizen, I periodically upgrade my operating system and now have CDs for Windows 95, 98SE (upgrade) and ME (upgrade). But with the release of Windows XP, I'm wondering where all this upgrading is going. When I reinstalled Windows, I wasn't allowed to upgrade directly from Windows 95 to XP. How can I get off the upgrade merry-go-round? I could buy the full version of XP but this is an expensive option given my investment in previous versions. Microsoft should allow us to trade-in upgrade CDs for a full version of the latest platform. I'd gladly surrender my collection of disks for a full version of Windows XP on a single CD.

John Ord
Essendon, Vic

AN ACT OF VIOLENCE

The government's knee-jerk reaction to computer games is really frustrating. When I heard that the Office of Film and Literature Classification tried (unsuccessfully) to ban *Ghost Recon*, I had to speak up. I've played this game, and frankly, it isn't that violent. Some material should be limited to older audiences, but banning games just encourages game developers to ignore Australian consumers in upcoming releases.

James Odgers
Townsville, Qld

SPEED FREAK

In your comparison of FireWire (1394) and USB 2.0 (*APC* February, page 30), you conclude that USB 2.0 is faster and is therefore a better choice for high-speed data transfer. You argue FireWire at 400 megabits per second (Mbit/s), will be eclipsed by USB 2.0 at 480Mbit/s. This might be true if the maximum speed was always possible and if the standards themselves were not always evolving. But like USB, FireWire has not been static and the 1394b standard has expanded to cover bus speeds of 800Mbit/s, 1.6GB/s and architectural support for 3.2GB/s (all over distances of up to 100m). The fact that so many Japanese manufacturers include 1394 support in their products suggests to me that both bus systems will continue to co-exist for some time to come — with FireWire still the best choice.

Yehuda Harmor
Castlemaine, Vic

Yehuda is the winner of April's Letter of the Month prize. Thanks for putting your view forward. Yehuda wins a copy of Microsoft Office XP Professional, with the latest versions of Word, Excel, Outlook, PowerPoint and Access.





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PALM PLAYS CATCH UP

WHILE THE MARKET LEADER'S TWO LATEST HANDHELDS DON'T BREAK ANY NEW GROUND, *DAVID FLYNN* SAYS THAT PALM IS HOLDING AN ACE UP ITS SLEEVE.

For the company responsible for igniting the handheld computer market, Palm has, of late, handed the technology lead to partners who license the OS for their own hardware. HandEra introduced the first memory cards to the Palm platform (albeit with CompactFlash), Handspring released the first 16-bit colour display, Sony doubled the standard resolution from 160x160 to 320x320, while both Handspring and Sony upped the on-board memory to 16MB.

On the face of it, Palm's efforts have been largely about catching up rather than breaking new ground, and the new m130 and m515 models do nothing to buck this trend.

This isn't to say they aren't good products. They're sensible additions to the showcase windows, and will attract their share of new purchasers (although *APC* expects relatively few upgrades). But neither will set the market alight.

► *Face plates from Palm's m100 series and the Palm portable keyboard*

M130: COMPACT COLOUR

The m130 brings a colour screen to Palm's fun'n'funky m100 series, although the \$669 price tag (almost \$200 above the monochrome and otherwise identically specced m125) will demand some serious justification.

The display uses the same bright panel as the classic Palm IIIC, now made even more readable by the smaller screen of the m100 family, which condenses the standard 160x160 resolution into a physically smaller area. The result is vivid and vibrant, although as with the IIIC, the screen is quick to wash out in direct light.

The impact of the colour screen on battery life is negligible, as the m130's rechargeable battery is topped up every time you dock the Palm for a HotSync session. On-board memory is pegged at a plentiful 8MB, and the m130 ships with what is becoming Palm's standard software bundle of Desktop To Go (for synchronisation within Word, Excel and PowerPoint documents) and a mobile Internet bundle containing everything from SMS and email software to a WAP browser and Web clipping apps.

BLUETOOTH SD CARD

APC obtained an early sample of Palm's Bluetooth SD module. Manufactured by Toshiba, it's similar in dimension to Sony's MemoryStick — making it slightly shorter and squatter than a stick of chewing gum. Priced at \$299 it should be available now. When installed, the top third of the module protrudes from any SD Card-ready Palm. The bundled software loads several simple Bluetooth applets including a text chat program and a shared whiteboard for drawing.

To fully test the Bluetooth scenario, we also obtained a Nokia 6210 mobile phone fitted with Nokia's combo Bluetooth-battery pack, and partnered this with two notebooks fitted with Bluetooth PC Cards.

But getting the phone, handheld and notebook all talking together proved problematic. It's all in the configuration of each device and the way they then "discover" each other in order to form this personal on-the-fly network. While the Bluetooth-equipped m515, Nokia 6210 and notebooks could "see" each other, they refused to work together with Bluetooth's promised hassle-free immediacy and ease.

When Bluetooth *does* work, it dazzles with its elegance. In terms of notebook-to-notebook communications, Bluetooth has come quite some way since the first PC cards appeared last year



— the latest Bluetooth 1.1 specs surpassed the 1.0 debut in both the range of communications and the stability of the connection. And sharing scribbled notes or playing head-to-head games with a few Bluetooth Palms is a doddle.

But from our initial experience it's clear that Bluetooth isn't yet ready to offer the wireless version of "plug and play" between different devices.

PALMOS 5

Palm's "Next Big Thing" is version 5.0 of their PalmOS. Despite its nimble nature, the PalmOS has almost reached the limits of its capabilities, doubly so when shackled to a range of Motorola processors with a top speed of 33MHz. This lacks the grunt to meet Windows handhelds in several areas with high appeal to personal and business users, especially in multimedia, where unlike PocketPCs the PalmOS offers no native playback for digital audio or video, nor voice recording.

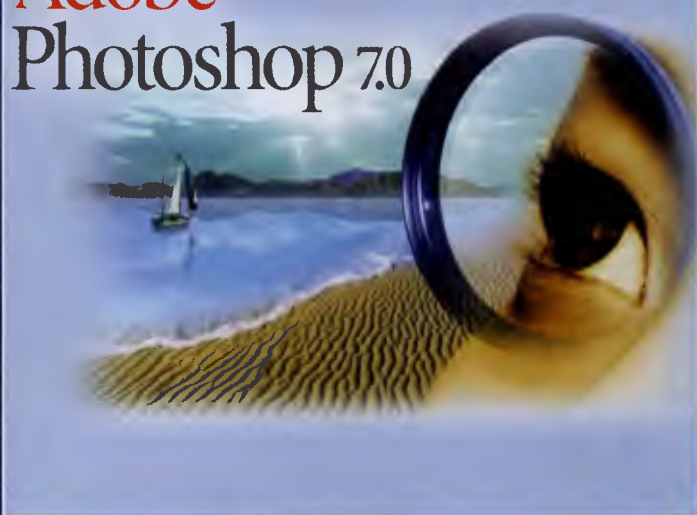
That was the reason for Palm's acquisition in April last year of the Be company and their multimedia-savvy BeOS. Elements of BeOS will be threaded into PalmOS 5.0 and more so into PalmOS 6.0 (slated for mid-2003).

Palm's next OS will be designed for chips based on the ARM (Advanced RISC Machines) architecture. ARM chips throttle to over 200MHz and are already used in several PocketPC handhelds — for instance, Intel's StrongARM engines drive Windows handhelds from Compaq, HP and Toshiba.

Perhaps the biggest question underlying the transition to OS5's ARM platform is backwards compatibility: will applications written for the current Palm handhelds and their Motorola DragonBall RISC processor run on OS5?

Programs written for OS4 and earlier editions will run in OS5 under an emulation mode, and the experience with previous platform transitions shows that emulation typically yields three results: programs run faster, slower, or not at all. Palm expects the "not at all" factor to represent some 20% of current apps. ■

Adobe Photoshop 7.0



BIG MAC TIME

DOES ADOBE'S LATEST APPLE FALL FAR ENOUGH FROM THE TREE, OR IS IT OS X-ONLY MATERIAL? *By Paul Mirtschin*

Mac OS X users can finally rejoice — Photoshop is finally Aqua native. Yes, the latest version of Adobe's popular image-editing program has been rewritten as a native OS X application. But for the PC users out there, Photoshop 7 looks more like a point update, with only a few real updates to the program. Most of the additions and changes are very useful, some of them must-haves even, but there is just not enough to warrant a full version upgrade.

Some of the new features are the Patch and Healing Stamp tools, the addition of spell-checking, a very handy file browser, and the new Auto Colour feature for automatic removal of colour casts in images. These will very quickly fall into everyday use for most power users. Also new is the long-awaited ability to remap colours in a GIF image to transparent, as well as allowing transparent areas to be restored to their original colours.

The program also now lets you print multiple images to a single printout, add Acrobat security to files, and set up multiple workspaces. The latter will be very handy for studios that have several people using the one machine.

Although Photoshop 7.0 was still in beta copy at the time of writing, the only problems APC experienced were under Mac OS X. Installation

and performance under Windows XP and Mac OS 9 were flawless, and in this environment the application is suitable for design work immediately. Under OS X, however, installation had me searching for the OS X 10.1 update, as the program will not install under anything less. Once installed, its performance seemed a little slow. This is to be expected of a beta release, and as always, the final release should show a marked improvement in performance.

Included in the package is ImageReady 7. There isn't that much new in the program apart from the new Rollover pallet that allows you to view all the slices, rollovers, image maps and animations of an image in a single palette. It still matches Macromedia Fireworks for ease of use and features, plus it's a great addition to any Web designer's toolbox.

With performance matching Photoshop 6 in speed, and with the addition of some much-needed features, Photoshop 7 is well worth the money if you aren't merely looking to upgrade, but rather are buying new. However, for Windows-based users preparing to upgrade, the new features may not warrant the cost. It's Mac OS X users who really want to get the most out of Apple's new Unix-based operating system who are most likely to purchase this latest release, as they get the benefit of OS X native coding as well as the much-anticipated features. ■



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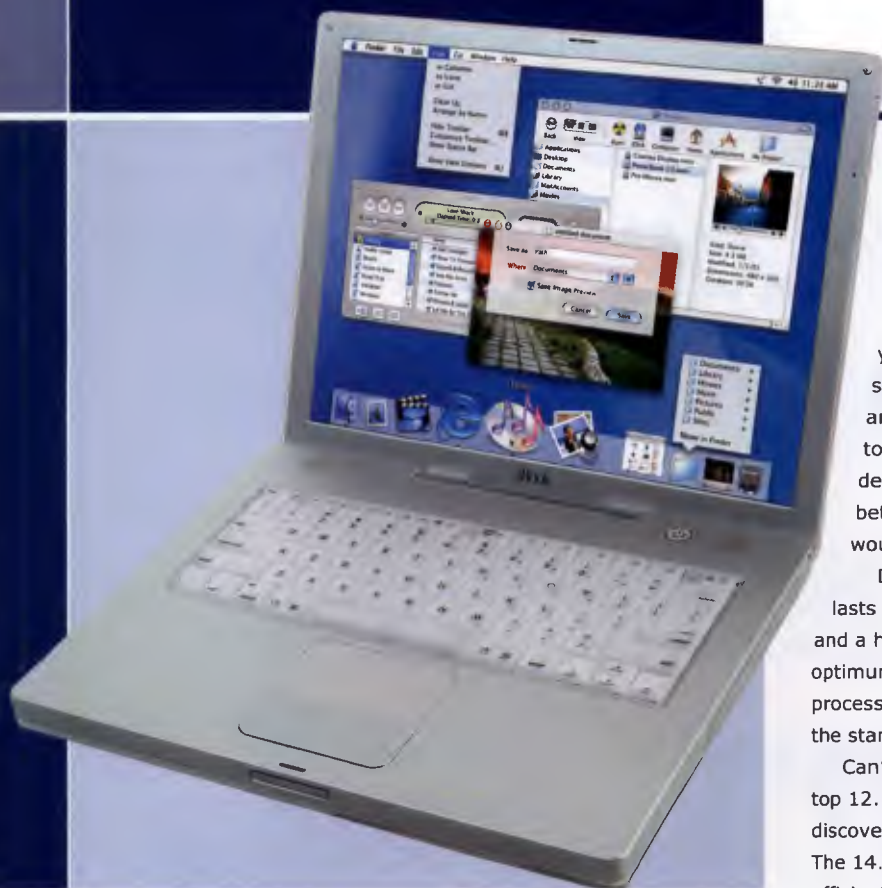
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SIZE SURPRISE

IT MAY LOOK LIKE NOTHING'S CHANGED, BUT DON'T THINK FOR A MOMENT THE NEW 14.1in iBOOK IS JUST MORE OF THE SAME. *By Fiona Angus*

Add two inches of screen, a dash of power, a little more battery life and a whole lot of weight and you've got the new iBook.

The style, portability, features, performance and price of the 12.1in iBook made it the Best Notebook in the 2001 APC Technology Awards and the best-selling Mac notebook ever. But the crucial 12-month anniversary is looming for the white iBook (the first colourful clam-shell incarnation of the iBook lasted less than two years) and the range has already had one performance boost.

Apple isn't willing to give up this winning design just yet — especially when it's such a perfect match for the new iMac. Instead, Steve Jobs has incorporated into the new iBook design the 'enhancement' he claims was the number one request for the iBook from its devoted user-base: more screen.

The subsequent 14.1in iBook may look like a larger-than-life replica of the 12.1in, but the attendant processing boost and packing in an extra two inches of LCD into the same design creates a completely different beast.

The iBook was never a lightweight notebook and you have to tolerate an extra half-kilo for the larger screen (2.8kg with the power pack). Sitting alongside one another, the broad base of the 14.1in (32cm x 26cm) tends to eclipse the neat A4 proportions of the 12.1in. If Apple's design team had extended the LCD into the thick-ish border between the edge of the screen and iBook's lid, the case wouldn't be as hard to manhandle.

Don't think that all that bulk is going to waste. The 14.1in lasts an extra hour on the road, notching up a marathon four and a half hours under everyday conditions (Apple says six hours optimum). There's a dual DVD and CD-R drive, a 600MHz G3 processor, twice the memory at 256MB, a 20GB hard drive and the standard double USB and FireWire.

Can't resist for \$3,995? APC pitted the 14.1in against the top 12.1in model (600MHz, 20GB hard drive and 128MB) and discovered the performance was smoother rather than faster. The 14.1in booted up in double-time, but because OS X is so efficient, application launch times were almost the same. It was the same story importing video in iMovie and exporting clips into QuickTime format.

Let down by portability and performance, the 14.1in rates half a point less than the 12.1in. The iBook was conceived and designed as the perfect consumer portable. It handles Apple's "iSoftware" (iTunes, iPhoto and iMovie), surfing the Net and Office applications brilliantly, but as a hefty desktop replacement, it ranks alongside rival PC notebooks such as the Dell Inspiron 8100 (APC October, page 28).

The 14.1in may satisfy screen hogs, but it's also cleared the way for a speed hit and price cut to the 12.1in range. The bottom line is: you pay \$600 for another two inches of LCD, a little more battery life and extra memory. However, the reigning 12.1in iBook gives you something for free — ultra-portability.

Just remember what your mother used to say: Less is more . . . more or less. ■



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FLASH BACK

MX MAY MEAN 'BUDGET' AT NVIDIA, BUT THERE'S NOTHING CUT-PRICE ABOUT THE LATEST FLASH. By David Emberton

Flash MX is a big release: in fact, it's probably the most significant update of 2002. Technically it's Flash 6.0, but the product is part of Macromedia's new MX branding strategy, so it carries the two-letter moniker in place of the version number. Flash MX has something new for everybody, although coders and developers get a lot more than the animators for whom the biggest carrot is improvements in the way frame editing is managed.

In the looks department, Flash MX is certainly a departure. While still recognisable as a Flash product, Flash MX has shed the controversial Adobe-like interface of its predecessor and gone with a look that is more like a cross between Dreamweaver and Microsoft Office. A contextual properties inspector allows you to view and edit the vital statistics of the object that is currently selected. Dockable palettes dominate the rest of the interface. They can be clumped together in vertical groups, and expand or collapse individually.

The glitziest of Flash's new additions is a native Flash video format. Now you can import video from AVI, QuickTime Video, MPEG and even DV sources and then output it as part of your animation, playable in Flash Player. The video is compressed using a proprietary codec developed in partnership with Sorenson. Flash Player can even play live video streams encoded in the FLV format.

A Flash UI Component is updated in real-time using the new Live Preview mode.

Although one of the touted features of Flash MX is enhanced colour management, ColorSync adherents need not get excited. This essentially boils down to a redesigned Color Mixer.

One of the biggest buzzwords of 2001 was accessibility. Indeed, a major downside of relying on Flash for content creation has been dismal accessibility features to date. For Flash MX, Macromedia really went all out to make compatibility with screen-reader software happen. Unfortunately, the accessibility magic only works on Internet Explorer, run on Windows — and the latest versions of Internet Explorer at that. Still, it's a step in the right direction.

Oh yeah, and ActionScript got hot. Folding in a lot of work done by the Flash scripting community, ActionScript now includes advanced object-oriented features, as well as event listeners, a P2P-ish ability to create shared server spaces known as Shared Objects, and other stuff geeks will love. Plus, there's now a set of ActionScript drawing commands that draw shapes on the fly, and the ability to directly attach JPEG and MP3 files.

The script-editing suite itself is a treat, featuring a beefed-up Actions Panel, Reference Panel (no more trips to the browser for online help), and also the Debugger. It can get a bit clumsy working with both the Actions and Reference panels at the same time, but the addition of code-hinting and automatic formatting is a real improvement.

Also notable is the news that Flash MX is the first version of Flash available for Mac OS X: it can save Flash 5 compatible FLA files, and includes a set of pre-built, skinnable interface components. More intriguingly, rumours persist of a ColdFusion-integrated upgrade that may be released later in the year offering increased communication options. For now however, this is a highly recommended upgrade for Flash designers working on more than just graphics and animation. ■



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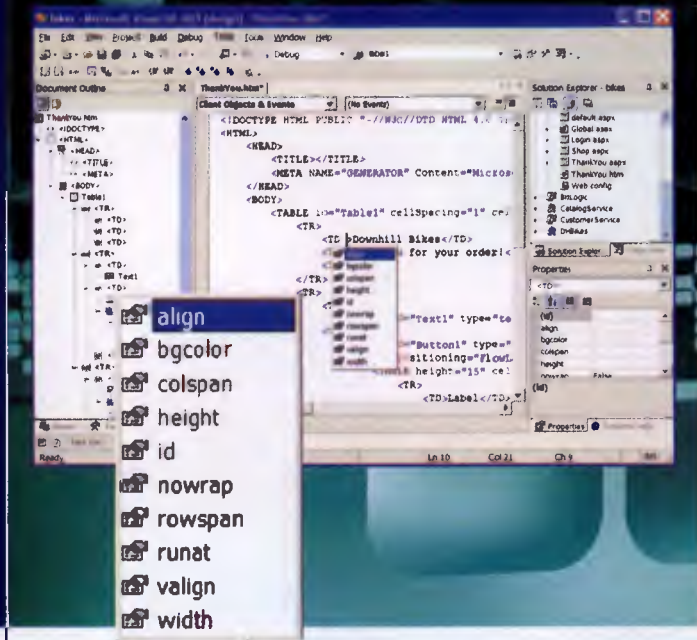


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MS VISUAL STUDIO.NET

CODERS THE WORLD OVER CAN NOW REACH OUT AND TOUCH UP THEIR APPLICATIONS. *By Matt Overington*

Finally the full release of Visual Studio.net — the upgrade to Visual Studio — has been made available to the programming community. A massive suite of programming tools spanning several gigabytes and designed for producing applications that can be run over a network or Internet connection, VS.net aims to enable numerous programmers to work on a single project and serve the code online. It can also execute code fragments stored across a network, so you can write a program that incorporates code from a number of different sources.

Say you'd like to produce an MP3 player using VS.net. You find someone in Sweden has coded a super-efficient decoding routine that she has served and agreed to let you use, and a programmer in the US has written loading routines for a wide variety of audio formats that he has also agreed to let you use. Both of the programmers in Sweden and the US serve their routines online, and your code that stitches them together can be stored on a different server altogether. When a user executes the program, your code makes calls to the externally stored routines as if they were held

locally and provided you have a fast connection between all the code repositories, the end user may never know.

As the code is sent across the network in XML and HTTP packets, it means that a service can be a combination of components written in any programming language, and then executed via a browser on any computer. Developers are able to write in virtually any programming language, and have their code execute on any computer with a compatible browser.

By default you are coding all the time in a virtual network space (you set up a local host when you create a new project within VS.net from which all code is executed when you are writing and compiling your code). By using this approach, you can test your code and not have to worry about whether or not it will actually execute over a network connection. On the other hand, to execute code that is written in VS.net you need a Web server to serve it from.

VS.net is able to interpret and compile code from vast number of programming languages, including the Java and C families, perl, FORTRAN, PASCAL, even the more esoteric like Ada and COBOL. VS.net works by converting all the pure code into an intermediate language called MSIL (Microsoft intermediate language) and to an XML Web service for execution. As long as your coding syntax is correct, you can integrate routines written in each programming language seamlessly. It's potentially confusing for project managers trying to track code written in multiple languages, but technically possible.

There are a minimal number of differences between the Visual Studio.net and Visual Basic coding structures, and approximately 75-80% of legacy code entered in Visual Basic will run under VS.net without any modifications at all. Any changes that are required can generally be traced through with minimal effort, and we found that we only once had to spend more than an hour converting four 1,000 line code fragments.

The final release of VS.net has been made available to developers since January 17. The fact that you can have collaboration between several programmers in different countries simultaneously working on the same project is undeniably the direction application development is beginning to head. Visual Studio.net is an advanced development platform for XML Web services that has the potential to drastically change the way applications are written and delivered. ■



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THE COST OF INSPIRATION

Creative's new digital multimedia speakers may seem underpowered compared to Logitech's offering below, but they're well balanced and deliver great performance. They consist of a 30W RMS subwoofer, a 21W centre speaker and four 7W satellites for a total output of only 79W.

Power concerns aside, there are no complaints about options — they come packed with three digital and two analog input ports, Dolby Digital and DTS decoding abilities, and individual volume knobs for centre, surround and subwoofer speakers. But the real measure of a good set of speakers is how they sound.

Like the Logitech Z-560, we tested the 5700s with music, DVDs and games.

They performed very well across all three of these applications, with excellent clarity and a very clean treble.

To use full 5.1 surround you'll need a soundcard with digital output like a SoundBlaster Live 5.1 or Audigy. Also, there's a huge leap in terms of quality when using digital.

Given that most of the satellites are only 7W, we were expecting a rather weak surround experience. While admittedly a touch light on the bass, these speakers do a great job in creating a believable environment without dominating the area they occupy.

The subwoofer has a decent range and a good bouncy kick to it. Low frequency bass (like the rumbling of large drums) gives a clean spine-tingling buzz, and there's a fair amount of punch to explosions and mid-range sounds.

With all these positive aspects, it's a shame that the Inspire 5700 has one very tender Achilles heel: price. At \$900 they're expensive by anyone's measure.

These speakers offer excellent range, good clarity, and overall it's a great set. But are they worth such a hefty price? No.

Daniel Gardiner

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Logitech Z-560 speakers

SOUND LOGICA

What the heck does a mouse and keyboard company know about speakers? Quite a lot as it turns out. Logitech's new offering is a 4.1 surround THX-certified getup, that offers both competitive pricing and great sound.

The Z-560 has an impressive specification. At a total power rating of 400W RMS it's twice as powerful as the Altec Lansing 641 speakers, which won the Editor's Choice award in our January speaker round-up (see page 66). The satellites pack 53W apiece, while the subwoofer is an impressive 188W. What this effectively means is that they can get ear-shatteringly loud. In terms of sheer power they outclass many home theatre systems under the \$2,000 mark.

We tested these speakers with our usual regime of music, gaming, movies and stress trials. They did not disappoint. To begin with, the satellites are

superb for a speaker set in this price range. They offer excellent clarity and carry enough bass to generate a realistic atmosphere in movies and games. Despite the lack of a centre channel, vocals in movies were clear and precise, and surround effects were well defined.

The subwoofer harmonises nicely with the satellites, and both speaker types are fairly flexible and give the set a large comfort zone. They sound good at most volumes except full, and this is mainly due to the sheer amount of noise rather than any audible distortion of sound.

The Z-560's only significant weak spot is its subwoofer. While powerful, the sub's sound output can get a little muddy when confronted with demanding bass. In these instances it becomes difficult to distinguish individual beats, especially at high volumes.

Despite these faults, the Z-560 is a bargain at only \$499.95. You'll be hard pressed to find a system this robust at this price.

Daniel Gardiner

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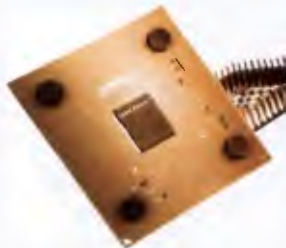
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Athlon XP 2000+

The Athlon XP is built on AMD's 0.18 micron process but it is not actually running at 2GHz but at a real clock speed of 1.66GHz. The naming convention appears to be a marketing attempt to keep up with the higher clock speeds of the Pentium 4s.

However, the scores the AMD chip achieved under benchmarking put it up there with — and beyond in some tests — Intel's fastest desktop processors. The 2GHz Athlon XP is priced at US\$399 (AUD\$772.60) each if you buy them in batches of 1,000.

www.amd.com.sg/au



Flash USB Drive

We can't get enough of these memory keys at APC and the folk at Flash USB Drive Australia reckon the same. We had the 16MB capacity key, going for \$99. Other sizes range up to 1GB which will set you back \$2,395. Hang the expense though, it's the simple convenience of having this amount of storage in the pocket ready to simply plug into a convenient USB port that makes this technology the most likely replacement for the venerable floppy disk.

www.usbdrive.com.au



TOUGH AT THE TOP

When you're one of the big three in mobile handsets (as are Ericsson, Motorola and Nokia), the public comes to expect all your new products to fall in the latest, greatest, coolest category. So for Ericsson's latest handset — the T65 — it's a hard call having to live up to this image.

The phone's cause is not helped by its plasticky construction; compared to the Siemens model (seen below) the T65 feels like a toy. Adding to the effect is the SIM card holder which is recessed into the top of the phone — not very secure when a flick of the thumb can expose the SIM card to all and sundry.

The phone's feature list reads like a "where it's at" statement. There is dual GPRS and GSM band operation, WAP browser, EMS messaging, chat and email, and room for 250 contacts on the phone. Ericsson has also included its picture editor, voice control for hands-free operation,



Sony Ericsson T65

and an appointment calendar. The LCD is a convenient 101 x 67 pixels.

With many of the features, it's a matter of looking at the details for the enhancements.

For example, the phone book is arranged hierarchically and has two operating modes. The default reduced format displays the essential data (such as name and number), but if you switch to extensive mode, all contact details entered are displayed.

You can also associate a picture to a contact.

The size of the phone is not a problem, matching the dimensions of many similar pocketable phones, but I have one complaint: the size of the keys. My hands are not big for a guy, but one-handed operation using the thumb to punch the numbers was very frustrating. Otherwise the T65 at this price looks par for the course for this type of phone.

David Lin

Contact Sony Ericsson

Phone 1300 650 050

Online www.ericsson.com/mobilityworld/

Price \$589

Verdict ■■■■

THE OUTDOOR TYPE

Aimed at the get-up-and-go guarana eating/drinking/chewing crowd, the ME45 is Siemens' version of the 'ruggedised' mobile phone. Renowned for building quality and conservatively stylish handsets for mobile professionals, Siemens can now deliver its phones to those who are more prone to dropping it, than holding it with a velvet glove. However, conservatism runs deep, and the ME45 isn't the extroverted, chunky rubber-clad device you would expect of a 'go anywhere' sales pitch. In fact, apart from the keypad, navigation and volume buttons, there isn't much use of rubber at all.

Still, Siemens claims the ME45 is water, shock and dust resistant and there has been particular attention paid to the battery cover's seal. Its small, rounded form and adequately sized keys make for a handset that's pleasant to use. The speaker is also crystal clear and can be used as a hands-free speakerphone. Most impressive, however, is its



Siemens ME45

large screen size which can display seven lines of text and comes in handy for its built-in WAP 1.2 browser and games.

However, the ME45 is far from being a novelty phone as it's about as full-featured as a mobile gets.

With calendar, alarm, tasks, notes and a currency converter among some of its functions, about the only thing missing is built-in Bluetooth. The ME45 has two separate databases for storing

numbers. One is the standard phonebook with names and numbers only, while the other is an address book which supports up to 500 full contact details, much like the way you see it in Outlook. Incidentally, it can synchronise with Outlook via its supplied Data Exchange software and serial cable.

Simon Tsang

Contact Shriro

Phone (02) 9415 5000

Online www.siemens-mobile.com

Price \$699

Verdict ■■■■



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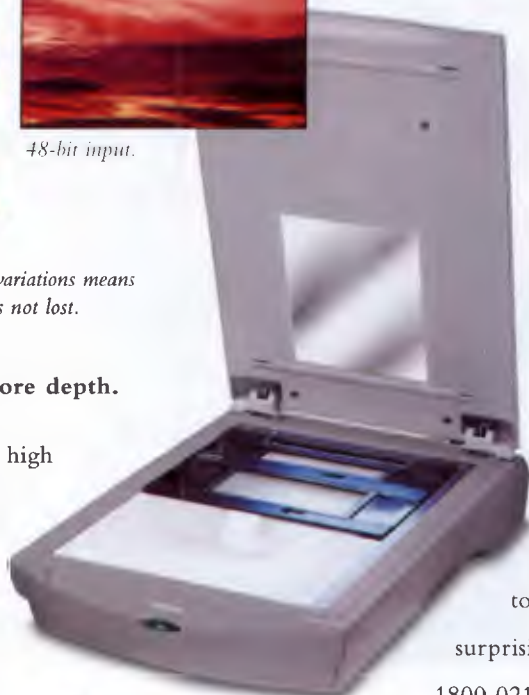


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WHY THIN IS IN

REPLACING YOUR OLD CRT MONITOR WITH A SHINY NEW TFT ONE LOOKS LIKE A GOOD IDEA. BUT WHAT LIES BEHIND THE AESTHETICS? WE WEIGH THE PROS AND CONS AND EXPLORE THE REALITY OF PURCHASING A TFT PANEL. *By Matt Overington*

By now you should have recovered from the spending frenzy over Christmas and summer. And, there is enough time up your sleeve for saving for a winter holiday. So, if the ageing CRT monitor on your desk has survived more computer upgrades than you care to admit, or if it clunks like there's someone inside desperately trying to get out whenever you change screen resolutions, the time may have come to retire your old monitor and replace it with a younger, sharper, slimmer model. Goodbye CRT; hello TFT.

HOW IT WORKS

TFT stands for thin-film transistor, which refers to the way that each pixel is displayed. While CRT monitors work by tracing a scan line

across the screen quicker than the eye can see (100 times per second at a refresh rate of 100Hz), TFT monitors manipulate each pixel directly, meaning that the signal is constant. If you take a photograph of a CRT monitor or television with high-speed film, you'll be able to catch the scan line as it is running across the screen (it's bright while the rest of the screen is dim), but a TFT panel doesn't rely on any tricks of the eyes to render the image, and so it is clear even when captured on film.

Essentially, a TFT panel is a grid of transistors matched to a desired screen resolution that can be manipulated directly (turned on, off, or to any colour in the visible spectrum) simply by modulating the voltage supplied to each transistor. Each pixel that you see on the screen equates to one set of three layers of physical transistors in the grid — one red, one green and one blue transistor. These layers of transistors can be manipulated to change the colour of the light emitted for that pixel. Most 17in flat-panel monitors operate in a native resolution of 1,280 x 1,024 pixels, which means the grid contains 1,280 (x three layers) x 1,024 transistors that can be manipulated as per the video signal sent to the monitor.

WHY A TFT PANEL?

In a conventional monitor, a beam of electrons is projected onto the screen at one end of a cathode ray tube. Because the image is projected, the electrons must be focused on the screen, and if the screen is not exactly at the right focal length, the image will be rendered out of focus. This is impossible on a TFT monitor. The most significant advantages of using a TFT panel over a CRT stem from the way the image is generated onscreen. Because each transistor is manipulated directly — and there is no focal length or projection to worry about — TFTs are much clearer and brighter than CRTs (with no out of focus spots on the screen). And because there is no continuous beam of electrons, a TFT panel emits less radiation than a CRT monitor.

In Japan, where office space is at a premium and desk space costs a fortune, flat-panel monitors are more popular because of their small footprint. A TFT panel occupies less than one-third of the desktop area of a conventional CRT monitor — making for more space-efficient offices and houses. Not to mention it's more stylish. A slim, bright monitor that looks like it belongs on the bridge of the Starship Enterprise is more impressive than a standard beige CRT.

WHY NOT?

Unfortunately, one of the biggest drawbacks to TFT monitors is also a direct result of using a grid of transistors to display the screen pixels. The grid of transistors is matched to a desired screen resolution; most 15in TFT panels will have 1,024 (x 3 layers) x 768 transistors in the grid, meaning that in a screen resolution of 1,024 x 768 pixels, each screen pixel will equate

to a transistor. As soon as you move out of the screen's native resolution, the monitor has to try and spread a lower number of pixels across the grid — for example, when running in a resolution of 800 x 600, it has to fit 800 pixels into 1,024 transistors. Because each transistor in the panel is a whole unit that can't be divided up, the monitor has to perform interpolation on the signal so that 800 'dots' can be spread across 1,024 "holes". This results in a blurred image in any resolution other than the monitor's native one.

Also, because the transistors take time to change state (between colours, or between on and off), there is usually latency between the image being sent from the video card and reaching the TFT panel. Early laptops suffered more from this (when you dragged a mouse across the screen, it would leave a trail as the pixels reset) than those with current-generation TFTs, but it is something to consider. If you are a gamer, a CRT will provide a better quality moving image.

Another drawback is the cost of the technology. Because of the amount of circuitry required to construct a TFT panel, flat panel monitors are relatively expensive next to CRT models. Although they are rapidly dropping in price, a TFT screen can be expected to cost you about triple that of an equivalent CRT. Even though TFTs use one-third the energy of a CRT, you need to be running your computer for years to recoup the difference in prices.

As it stands, TFT monitors are not for everybody, and it will be a long time before we see the complete death of the CRT, but TFTs do offer superior clarity and energy-saving features over the tube. Although there are other types of TFTs, all the monitors featured in this article are LCDs (liquid crystal display). They are also mostly 17in monitors, the exceptions being the 18.1in Hitachi, Sony and LG models. So, turn the page and check out eight of the safest, clearest and cheapest-to-run monitors available today.

LCD OR TFT?

Confusion reigns over what the correct term is for a flat screen monitor that relies on transistors to display each pixel. Technically a TFT (Thin Film Transistor) is a type of LCD (Liquid Crystal Display), so either term is correct.

There are two types of LCD display that are currently available: low-cost, dual-scan twisted nematic (DSTN) panels (as are commonly found in wristwatches), and high image quality thin film transistors (TFT) (that are found in laptops and flat screen monitors).

TFT CHALLENGE

ACER FP751

Acer's line of high-quality, low-cost monitors includes a number of flat-panel displays. The Acer FP751 is a 17in TFT that only has one analog VGA input, so you're limited to using it with an analog video card.

Although this will not pose a problem today, it is possible that in the future you will be limited in terms of the range of video cards that will be manufactured with an analog VGA port.

As it stands, the Acer doesn't use a replaceable VGA cable (it is soldered to the monitor at one end), so you would have to send the monitor back to a dealer for repairs if you happen to damage the cable.

The best design feature of the Acer monitor is the inclusion of a USB hub in the base, with two upstream ports and a single downstream one.

Auto-configuration is available in the form of the iKey on the monitor's front

panel. Pressing the button once will set the Acer up for optimum display based upon the signal received by the PC.

In operation, the Acer is clear, and the 250cd/m² display means that there's ample brightness to use the monitor in conditions where there is a lot of ambient light. Although the FP751 is the "plain Jane" in terms of appearance, it features a stable base, good screen area and a clear display.

The monitor also comes with a three-year warranty, yet is priced at just \$1,499. On that alone, the Acer model is one of the more attractive TFT displays on the market

Contact Benq

Online www.acercm.com.au

Phone (02) 9714 6800

Price \$1,499

Verdict ■■■



AURIGA RX174T

Although it is not the biggest in terms of screen area, the Auriga unit is easily the heaviest and bulkiest of the monitors reviewed here. This is both a negative and positive point. On the one hand, the biggest attraction of TFT monitors is their small desktop footprint and form factor. While on the other hand the Auriga is nice and stable on the desk.

The weight of the Auriga display is justified because it is one of the most feature-packed panels of the tested group. The monitor's rear panels are removable, giving ample access to the connections at the rear. As with the Sony monitor, the Auriga features two video inputs, so you can share a single monitor between two computers — particularly useful if you are running a computer as a dedicated server.

Also useful is a five-port USB hub, built into the back panel of the monitor and obscured by removable panels,

which has four downstream ports and a single upstream one for connection to the PC. In addition to the USB hub and circuitry for multiple inputs is an internal universal power supply, so the Auriga unit will work in the US and in Canada without requiring internal modification.

Although the Auriga is a bulky unit with a heavy body, the performance of the LCD panel is impressive, if a little dull. We found that during testing we had to run the Auriga's brightness at a high level (despite it being rated at 220 cd/m²), but the image clarity and sharpness was unaffected in the monitor's native resolution of 1,280 x 1,024 pixels.

Contact AKA Technology

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Price \$1,750

Verdict ■■■



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Tel: 61-2-9748-2233
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TFT CHALLENGE

DIGITAL DEVICE LL700F

The LL700F is the big brother of the LL500H that we reviewed in our January issue (page 38). Digital Device monitors are produced in Korea using the same LCD panels as the Samsung displays, so the electrical components are high quality and the graphical output is as good as the SyncMaster. However, while the SyncMaster is loaded with extras (a TV tuner being the most notable), the Digital Device philosophy seems to be "less is more", and this unit only features an optional USB hub.

For a 17in flat-panel display capable of running at 1,280 x 1,024 pixels at a refresh rate of 75Hz, the Digital Device is a relatively inexpensive monitor, and the build quality and reliability of the internal components is unquestionable. The TFT panel is clear and bright, despite only being rated at 200 cd/m² (candelas per square metre — a standard unit for measuring luminance), and the onscreen adjustments

are effective at correcting the image.

Even though flat-panel monitors are vastly more expensive than their CRT counterparts, the Digital Device unit is for someone looking for an LCD monitor on a budget. Put simply, it's just a good TFT panel. It only has a single input, no speakers and a USB hub is optional. If you're looking for a replacement for your CRT monitor — and you don't need the bells and whistles of some of the other TFT screens — then the LL700F should be near the top of your list.

Contact Digital Device Australia

Online www.digitaldevice.co.kr

Phone 0400 494 989

Price \$1,495

Verdict ■■■■



HITACHI CML181SXW

Like Sony, Hitachi doesn't offer a 17in flat-panel monitor in its range of displays, so we decided to look at an even bigger alternative — the impressive 18.1in CML181SXW.

The design of the Hitachi monitor is at first glance uninspiring, but a second look reveals that the designers responsible for the layout of the monitor spent some time on it. Removable plastic covers hide the connectors at the back of the monitor, and the connectors are positioned so that plugging in the cables doesn't require contortions of the hand and forearm. Both DVI-I (Digital Visual Interface analog and digital signal) and analog VGA inputs are provided on the rear of the unit, so if you have a current-generation graphics card with a DVI-I output, you can benefit from using a completely digital interface.

In addition to the front panel speakers, the Hitachi monitor also has a headphones socket, which we found surprisingly useful. It wasn't a feature that was missed on any of the other monitors, but it saves

you reaching around behind the computer to plug in headphones when incessant repetition of your favourite MP3s begin to annoy your workmates.

The CML181SXW was clear and bright (235 cd/m²) in all operating conditions, and the auto-calibration feature was effective at configuring the monitor's phase, contrast, brightness and sharpness.

The only thing the unit lost points on was its lack of a USB hub (although USB hubs retail for only about \$50).

In addition to the monitor, one of the attractions of a TFT monitor is its clean lines — and reducing the number of cables on your desk helps that.

Contact Hitachi

Online www.hitachi.com.au

Phone 1800 356 506

Price \$3,695

Verdict ■■■■



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TFT CHALLENGE

SONY SDMN80

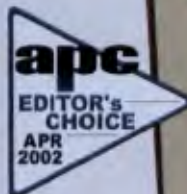
Saving the best till last, by far the most striking of all the monitors we sampled is the Sony SDMN80. Although Sony doesn't offer a 17in screen, there are two 18.1in models, and the SDMN80 is at the very top of the range.

This monitor is unique among those we looked at, as it employs a separate screen and media box that sits in between the computer and the screen. The box acts as a hub, so you can plug the audio and video outputs from two computers into a single monitor and then switch between them. The box also acts as a USB repeater, and there are two USB ports located on the side of the base of the monitor. This is particularly useful for a mouse, keyboard and host-powered USB device such as a digital camera.

Although it will display an image at maximum resolution, the optimum resolution for the Sony is 1,280 x 1,024 at 85Hz. The brightness of the Sony (200

cd/m²) is not as high as that of some of the other units we looked at, but in well-lit conditions the image doesn't suffer.

The Sony's output is clear and bright irrespective of ambient light conditions, and during the period when we had all eight monitors in our labs for testing, the Sony was the display that remained in use for the longest period of time. Little extra touches, like automatic voltage sensing, Macintosh and PC compatibility, and in-built speakers, help make the Sony stand out from the other screens. For those that can afford the \$4,999 that the SDMN80 costs, there really is no better flat-panel display under 19in.



Contact Sony
Online www.sony.com.au
Phone 1300 137 669
Price \$4,999
Verdict ■■■■

PHILIPS 170B2

Philips' submission to our Labs Challenge of TFTs was the 170B2. This is a somewhat plain 17in flat-panel display, but you can purchase the additional Multimedia Base for the monitor which allows you to connect USB devices, as well as audio.

Like the Acer FP751 monitor, the Philips 170B2 has a luminance of 250 cd/m². In operation, this made it brighter than the Sony unit at 200 cd/m². But we found the monitor a little bit too bright when working, or playing, in low-light conditions.

If you're prone to staying up all night cracking code, chatting with friends or just playing games, then you may find the Philips flat-panel display is just a bit too glary.

Unfortunately, we found that the auto-adjust feature was slightly off and was not an effective fix for the issues we had with excessive brightness.

We also found that we had to make

slight adjustments to the phase of the image to ensure clarity across the entire screen — even when it was set in the monitor's native resolution of 1,280 x 1,024.

This isn't a problem if you want to take the time to set the monitor up, but after getting used to Sony's excellent auto-adjustment, the Philips offering seemed an extremely poor judge.

The Philips monitor features a DVI-I input, in addition to the standard VGA connector, which will give you a higher standard of output than a regular VGA cable. Another nice touch is the inclusion of a built-in power supply, reducing the number of cables that end up snaking their way across your floor.



Contact Philips
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Verdict ■■■

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Often the highest quality display in a household is the one that is attached to the computer. Conventional televisions tend to display blurred images at low resolutions — which is why they make terrible monitors. But with a Samsung SyncMaster 171MP you can have high quality images on your TV, as well as your computer screen.

This 1,280 x 1,024 pixel colour LCD monitor can be converted into a television (via an external analog TV tuner) when you aren't using the computer. Given the high resolution and optical clarity of TFT screens, watching television on one is a pleasure. The TV tuner features RCA, S-Video, digital TV and standard antenna inputs, so you can play your console, watch DVDs and view broadcast television all on the same screen.

The unit even comes with a remote control, so you can operate it from the couch. The only problem with using it

as both a monitor and a television is that you will either need to watch TV in the study, or keep your computer in the lounge room.

The 171MP also has excellent speakers that can be used to play music, as well as system beeps. However, if you want to use the screen solely as a monitor, note that there is no USB hub. The 240 cd/m² TFT panel produces a clear bright image, and the onscreen menu can be adjusted via the remote control. Only the PAL version is available in Australia, but an NTSC model can be purchased in the US.



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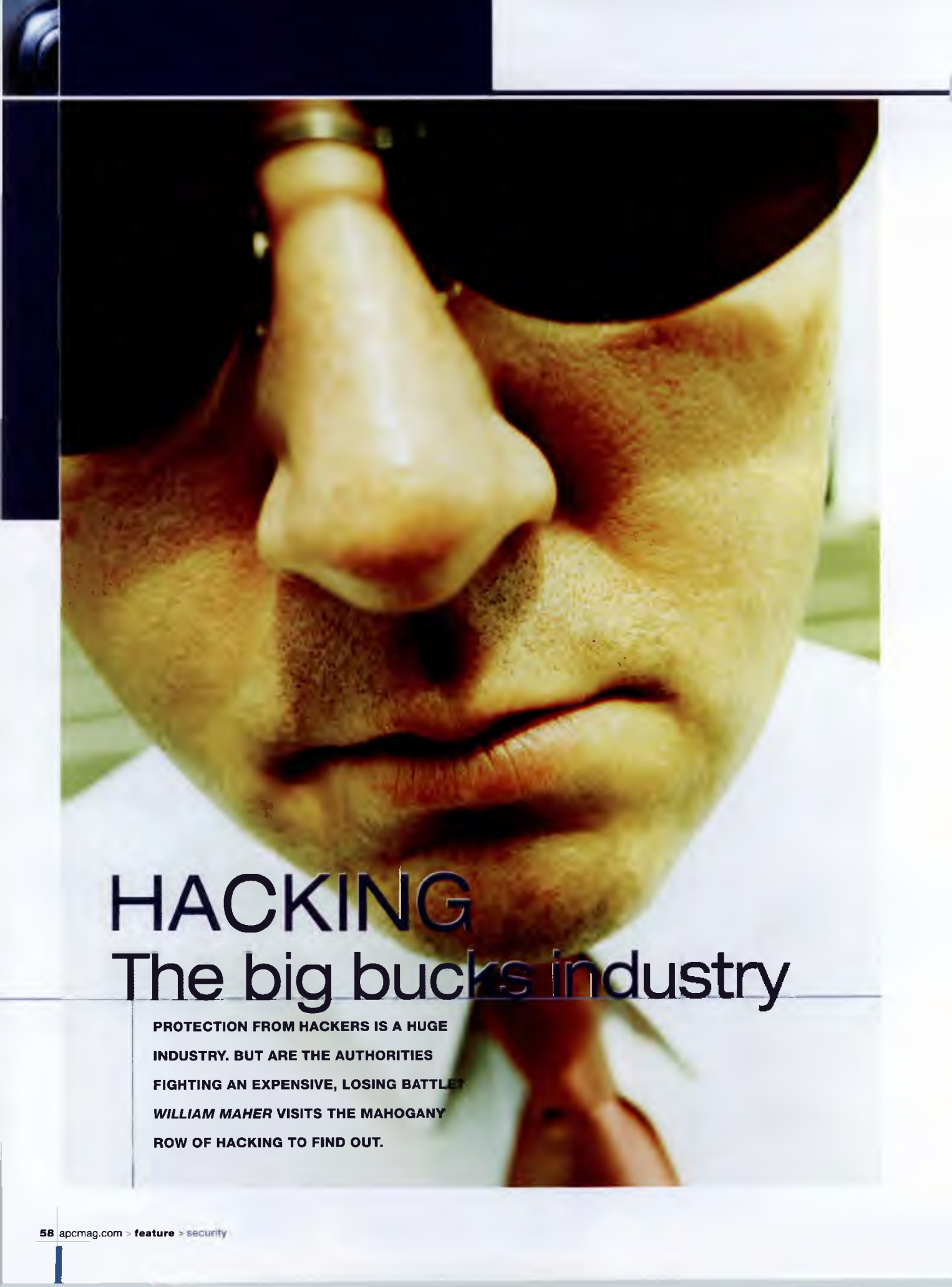
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HACKING

The big bucks industry

PROTECTION FROM HACKERS IS A HUGE
INDUSTRY. BUT ARE THE AUTHORITIES
FIGHTING AN EXPENSIVE, LOSING BATTLE?
WILLIAM MAHER VISITS THE MAHOGANY
ROW OF HACKING TO FIND OUT.



It's the building that never sleeps. Down inside a basement somewhere in Canberra's Parliament district, the concrete bunker hums 24-hours-a-day with the sound of computers. Security is tight — to get in you need to pass James Bond-style through high-tech identity checkers like hand or finger scanners. Once inside, a personal escort shadows your every move. It's a strategy borrowed from the military: the deeper inside you move, the tighter the security gets.

Through the front door, past a waiting room, is the inner sanctum; a monitoring station lined with banks of 12 monitors. Right now there's not much activity, and the room buzzes with the low hum of electricity and computer fans. On each console screen is an alert system — green, yellow and red — all linked to a sophisticated electronic tripwire. Watching and waiting . . . for computer hackers.

This building — a private monitoring station hired by the government to watch its data networks for suspicious activity — is the frontline of a new battle, dedicated to stopping not drug dealers or bank robbers, but computer hackers.

Across the world, millions are being spent on an army of hacker hunters, a private security force whose job is to stand guard 24-hours-a-day, like jewellery store security officers. Private investigators, covert operations, black boxes, emergency phone calls, late night hacking tests, how-to-hack courses, best-selling books — hacking is big business.

But while the data security industry balloons in size, a strange twist has seen the hacking scene lose much of its underground appeal. Instead of elite whiz kids, much of the Net's troublemakers are now nothing more than bedroom pranksters, making mischief like modern day graffiti artists. It's these "script kiddies" that are caught in the firing line of a cashed-up security force. So who's making money out of this new boom business, and are we spoiling hackers' fun once and for all?

HACKING CLASSES

From the basement in Canberra's underground, it's a long way up to the 20th floor of an office tower high above the Sydney CBD. Up here, the only sounds are of receptionists typing and the roaming packs of suited men and women who glide past in packs, muttering amongst themselves about reports and mysterious client contracts. It's hard to imagine that up here, in these swish climate-controlled boardrooms, a battle is being waged against green-haired geeks, and pizza-eating Internet pranksters.

Up on floor 20, a small group of people sit in pairs hunched over laptop computers. They're computer professionals; on a normal day they work nine to five fiddling with firewalls and pulling plugs, but today is different.

Today, they're learning to be hackers. A low buzz fills the air, the noise of whispers and mutters as each pair edge closer and closer, like old-fashioned safe crackers slowly worming past locks. The atmosphere is infectious. It's now midday and most people have been working away without a break since 7am. "Lunch is here", someone announces, but still no-one moves from their seat.

Hacking classes like this are now all the rage with data professionals. Five years ago, company CEOs might have laughed at suggestions they send staff on a hacking course. Now it's just the opposite. People pay anywhere between \$3,000 and \$10,000 to think, breathe and act like a hacker for a week. To catch a thief, you've got to think like a thief, they say.

The man doing the teaching is Darren O'Loughlin, an ex-policeman with a softly spoken manner but an intense stare. He's a veteran of the Australian police force's Computer Crime Investigation Squad, where he spent five years doing covert investigations. Like many employed in the police service, he's since become a

private investigator, shielding corporates from the hacking underground on behalf of Ernst & Young. It's a far cry from his early days as a detective on the Victorian Police Force, where he investigated anything from "murder to shoplifting".

So why computer hackers? O'Loughlin explains the attraction: "It's totally different types of criminals and different motives. We see attack penetrations like a chess game. There's a lot of strategy, analysis, second-guessing, making educated guesses. It's very, very challenging."

The "eXtreme Hacking" course is only a small part of O'Loughlin's job. The exciting stuff happens when he joins a team of "white hats", security professionals hired to attack data systems looking for holes. Yep, you heard right — he and his work buddies crowd around a PC late at night, prying their way into banks or even electricity companies, like mischievous 14-year-old pranksters. And they get paid for it.

It's lucky all O'Loughlin is doing is testing for holes, because he'd be able to do scary damage with secrets and backdoors he learns about. Like the one inside the network of a South Australian power utility company. Just a minor hole, but it would've given hackers access to customer accounts and credit card details held on Web servers in three states.

Then there was the Unix script that slipped through firewalls like a hot knife through butter. A real life hacker got hold of that one and broke his way into more than 500 companies. He

► *Darren O'Loughlin: second guessing the hackers is "very, very challenging," says the former policeman.*

"We see attack penetrations like a chess game. There's a lot of strategy, analysis, second-guessing, making educated guesses. It's very, very challenging."

even left a calling card: "You've been hacked by Number Crunch", read the message.

O'Loughlin and his team are on call 24 hours a day for cases like these. There's even a 1800 number to call in case of a hacking emergency.

All over the world, it seems we're fascinated with hackers. In the US, the government has committed US\$880 million to anti-hacking research and other cyber-security programs. Laws like Australia's new Cybercrime Act 2001 are being passed to guard against this new "cyber-terror". The global network of emergency response centres, set up to deal with hacking incidents and virus threats, has grown from 11 members in 1990 to more than 100.

Down at the bookstore, shelves are groaning under the weight of books on hacking. Publisher McGraw-Hill boasts it has sold more than 500 million books in the enormously popular series, "Hacking Exposed". "It would outsell the average computer book five to six times," says local marketing manager Roger McKim.

A new series called "The Hacker Diaries" is due soon. Hacking is also flavour of the month at the cinema, with big-budget titles like *Swordfish* and *The Matrix* doing well at the box office.

HACKFESTS

Nothing shows off the hacking craze more than the hackfests — big money trade-show style extravaganzas where people flock to see hacking heroes like Kevin Mitnick, or get up-to-speed on the latest password sniffers. Whether you're a federal agent looking to hone your skills, or a 14-year-old wannabe hacker looking for mischief, there's a hacking event for every taste.

At DEF CON in Las Vegas, Linux geeks burn the midnight oil hacking their hotel's telephone system, while over at the Black Hat Briefings ("thwart those lurking in the shadows") the suits discuss defence strategies over cocktails.

There's also HAL (Hackers at Large), a kind of Woodstock for hackers in the Netherlands, where



thousands of geeks and goths pitch tents and hack by the light of gas burners. But while the crowds are bigger than ever, people say the hacking scene is changing, that the old cloak and dagger underground of the late 1980s and early 1990s is gone. "It's a different ball game," says Suelette Dreyfus, Australia's own unofficial expert on the underground hacking scene.

She's camped out under the stars at HAL, and says you're just as likely to encounter a nut wearing a computer eyepiece than you are a dedicated hacker. "I met one guy who's wearing a flak jacket and he's got his hard drive in one pocket and his battery in another pocket, and some little eyepiece that he's mounted on his head to view his computer screen. These guys had a 15-minute debate on whether you wear the eyepiece mounted on your head, or behind your ear. It was all about fashion-versus-functionality," she recalls.

These talented kids are finding other ways to get their

13-year-old weenies have access to more hacking tools than ever before. Virus writers, cracking programs, password sniffers — the hacking game is now just a point and click exercise.

kicks, leaving the hacking to underage bedroom pranksters — or "script weenies" as Dreyfus describes them. It's a curious twist, because these 13-year-old script weenies have access to more hacking tools than ever before. Virus writers, cracking programs, password sniffers — the hacking game is

▶ *Suelette Dreyfus: Australia's unofficial hacking expert says the scene has changed from the 80s and early 90s.*



now just a point and click exercise. There's no skill among the script weenies, Dreyfus says. They get their kicks from defacing Web sites, not cracking bank servers to steal millions. If they can't hack-in within 15 minutes, they'll probably just give up and try elsewhere.

"The vast majority of hacking attacks on any machine connected to the Internet are conducted automatically by some program run by a script kiddie who is not a threat to national

► *Graham Henley (foreground) and the aptly named John Hunter from PricewaterhouseCoopers*



People pay anywhere between \$3,000 and \$10,000 to think, breathe and act like a hacker for a week. To catch a thief, you've got to think like a thief, they say.

security or working for the Russian mafia. He's a bedroom hacker who's probably not very skilled, or that intelligent," Dreyfus explains.

It's a stark contrast to the late 1980s and early 1990s, when hackers caused a storm after cracking into NASA and then bragging about it to The New York Times. Dreyfus wrote about the story in her book "Underground", a snapshot of the early Australian hacking scene that is now being turned into a docu-drama for ABC Television. She argues that Australians were, for a period of time, the best hackers in the world. They wrote the tools, and they hacked the biggest targets like NASA, Citibank servers and military facilities. Aussies were at the cutting edge.

Today, it's a much different story. Dreyfus says most hackers have become too dumb or lazy and are mostly too young to cause serious harm to national security, though they might cause havoc for business. Software bugs are splashed across the news as soon as they are discovered and even the weenies have a wealth of data about security holes. What's more, there's thousands of them.

"There still are some very good hackers here, they're just very quiet. The very quiet hackers are just laughing their heads off because they have the cover of these script kiddies.

"They can weave in and out of machines and it's very hard to differentiate any of the footprints they leave behind from the massive noise created by the script kiddies."

WATCHING THE DETECTIVES

Back up in the lofty heights of Sydney's skyscrapers, the investigators are hard at work. This time we're at PricewaterhouseCoopers, where Graham Henley works with a small computer forensics team. Funnily enough, it's mostly ex-cops here too. John Hunter and Richard Williams are both from the NSW police force and Henley's from the Australian Federal Police. Henley even has a claim to fame, having arrested Skeeve Stevens, supposedly Australia's most notorious hacker. Charged with stealing credit card numbers from an ISP, Stevens went to jail for 18 months in 1998, a rude shock to Australia's wannabe hackers.

Henley's workplace looks like any other computer lab,

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except for the big, black briefcase-like portable computers on the desks. They're the old fashioned luggable type, with big panels on the side out of which spills wires and data cables. Henley uses these black boxes to collect data from the machines of suspected hackers. They sneak in at night (with company permission), plug the black box into a suspect's machine and take a complete copy of all the data. Special quick-change hard drive bays mean they can "image" as many as 10 PCs in a night. Later in the lab they trawl through the evidence, looking for clues. Perhaps the employee has been sending anonymous threatening emails, or maybe they've been surfing porn.

This is the type of work that occupies much of Henley's time. Disgruntled employees, staff who steal. There are real hacking cases too, but a lot of the time these are lost under a barrage of nuisance calls by script kiddies.

"If you have a bunch of kids bangin' at your firewall 24 hours a day, and there's all this traffic coming in to your firewall and bouncing off, you may miss the one connection of the guy who's got the fantastic script that gets him through the front door. It might be lost in all that other stuff," Henley explains.

They're straight-talkers, these ex-police. I ask John Hunter whether new security technology means there will be any hope of relief from hackers. He laughs. "Technology is driven by people that don't think about security. Their priority is to get out some whiz-bang widget as soon as possible. It's a battle. Some vulnerability comes out, then they patch it. It's a like a road with potholes. It rains, then you fill them in. Then it rains and there's another one."

That's no comfort to the average Web surfer trying to cope with the influx of dodgy data. Setting up a cable Internet connection is now a minefield of firewalls, virus checkers and alarm systems. "Protect your data, before it's too late," scream the security

Putting a lid on hackers is set to become a multi-billion dollar business with Gartner predicting an increase from \$US720 million in 2000 to \$US2.2 billion by 2005.

vendors. "I got hacked once on the Net," says Daniel Buckingham, a 24-year-old IT worker from the mid-north coast of NSW.

"Someone up-loaded a Trojan to my machine which sent wacky colours across the monitor and then the words "I SEE YOU" scrolled across. At first it startled me a bit, but ask anyone who is on a cable network — there are millions of packet sniffers out there."

Freaky colours and cryptic messages like this has the security business booming. While much of the IT world slowly pulls itself out of a long sales slump, the security game is flush with cash. International anti-virus company Sophos has just moved from dingy offices in the Sydney CBD to a room with a view overlooking the harbour bridge. Business is better than ever — they say there's upwards of 1,000 unique viruses discovered every month now. Law firm Deacons has its own "esecurity" division. You might even see the lawyers mingling with the geeks at shows like Hack 2002 in Melbourne and Sydney.

And all the while, more security holes are found. The stories certainly make for good headlines: "Internet flaw sparks terrorism alert", read one newspaper headline recently. "Internet faces shutdown", read another. It's a continuous circle interrupted by the occasional arrest.

In the US, a 21-year-old man was sentenced to 21 months in prison for his mischief-making inside NASA's network. Australian police recently arrested another 21-year-old in Sydney after raiding his house for evidence of an alleged hack.

You can bet that this is only the beginning. Putting a lid on hackers is set to become a multi-billion dollar business, with Gartner predicting money spent on private hacker protection will increase from \$US720 million in 2000 to \$US2.2 billion by 2005. Companies are spending more dollars on security software, Web surfers are barricading their cable connections, while a rising tide of script kiddies is finding its way past the roadblocks.

Darren O'Loughlin explains it best, like only an ex-policeman can: "It's like a suburb in the city which is having lots of problems with homes being attacked by burglars. Everyone might put bars on their windows, but then they'll just rip their roof tiles off and get in that way." ■

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Many believe the racy musings on oral sex sent by Claire Swire to her London lawyer boyfriend — and henceforth around the world — sit at the pinnacle of electronic gaffes of our times. However, in the treacherous world of workplace email, Claire's effort wouldn't make the final cut.

Few people know that fresh from beating Rodney King near to death on a Los Angeles street in 1992, LAPD Officer Lawrence Powell sent this email to a workmate: "Oops! I haven't beaten anyone that bad in a long time." At trial, prosecutors let Powell



explain his actions on the infamous videotape as "necessary force" before presenting his smart-mouthed email as further evidence he was a racist cop. Powell went to prison. King became a millionaire.

And who can forget Monica Lewinsky? In her autobiography, she speaks of the "violation" she felt during the Starr investigation when deleted emails, some of them two years old, were retrieved from her office computer. In many, she refers to the man with whom she shared cigars as "the big creep." One email read: "I want to hug him so bad right now I could cry." Everyone did, later on.

This is the real power, and danger, of workplace email.

IS IT FAIR OR JUST "CYBERBLUDGING"?

Company lies, staff secrets, dirty jokes, smutty pictures and gossip about the boss have always been in the workplace. Companies tolerated such behaviour as long as it didn't offend anyone or get in the way of real work.

Technology however has shattered that informal agreement. International Data Corporation estimates that 15 billion emails are sent throughout the world each day — a number that will more than double in the next three years. Media research experts, Millward Brown, say the Internet is now the primary media used during weekdays by office workers.

Do work responsibilities make us such voracious users of email and the Internet? No, say most of the world's major Web research firms, measurement companies and monitoring software vendors. They call it "cyberbludging".

In its recent survey of US workers with online access, careers network Vault found that 72% read news, 40% shop, 37% search for another job, 34% check stock reports, and 28% organise social events. Other popular activities include checking sport scores, viewing pornography and making travel plans. Sound familiar?

Industry analysts Gartner estimates that non-work related surfing costs US businesses \$54 billion in productivity every year. Yet according to its July 2000 Cyberbludging Report, SurfControl says the annual figure in Australia is a relatively

small amount of \$300 million. Employers know they have to be vigilant, but employees don't realise they need to be careful. Our email and surfing habits are legally entitled to the same degree of privacy as a yell across a crowded city street. Every joke, photo, cartoon and whinge sent by email leaves a record, somewhere.

A single complaint from one person who saw a single offensive sentence, picture or homepage can ruin reputations, destroy careers and cost big money.

The world's most expensive email is "25 reasons why beer is better than women" — you can have a beer in public is just one "reason" APC can print. It cost the US resources company, Chevron, US\$2.2 million in a 1995 harassment settlement.

The cost and consequences of non-work Internet use can drain a company in five main areas — morale, productivity, bandwidth, security, and liability. Email access is now the most dangerous tool in the workplace because it is ubiquitous and indestructible. It gives disgruntled employees new weapons with which to wreak havoc and, since it creates documents that are legally binding, it leaves compelling evidence.

OUT THROUGH THE INBOX

Thousands of people have lost their jobs in recent years in Australia for misuse of company technology. Cases include the NSW Police, Telstra, FAI Insurance, Centrelink, Ansett, The Sydney Morning Herald and Toyota. Overseas, sackings have occurred at Intel, Xerox, The New York Times, BBC, Dell, Merck, Citibank, Salomon Smith Barney, and Dow Chemical.

Incredibly, it even happens to those who know technology best. Perth-based Epic Energy, one of Australia's largest gas transmission companies, recently dismissed its IT manager when an audit of staff Internet use revealed he had viewed banned sites on multiple occasions. He had even set up his own dial-in access from home to use the company's account to surf the Net.

The Fourth Amendment to the US Constitution provides privacy protection for Americans, but there is no such constitutional or common law right to privacy in Australia. It had been legal for Australian employers to monitor, in secret, an employee's use of email and the Internet, but new provisions to the Commonwealth Privacy Act mean employees must now be told when and why they are being monitored.

But consumer groups, human resources experts and lawyers worry about federal laws and their amendments colliding with state-based legislation. Kent Davey, a senior associate with Blake Dawson Waldren and president of the Victorian Society for Computers and the Law says: "Legislation to cover surveillance of technology use in the workplace would be better done at a Commonwealth level so we can have some uniformity, especially for national employers."

While it is against the law for companies to intercept emails they can read it once it sits on a server or a hard drive. But the Australian trade union movement says the Internet is a public asset, not something an employer owns. As such, employees should expect some right to privacy in its use.

 *Kent Davey: advocates the Commonwealth taking the lead in legislating workplace issues of surveillance and technology use.*

According to the US-based Privacy Foundation, there are about 100 million people who have Internet and/or email access at work. More than 27 million of them are under continuous surveillance.

An example of the intrusive nature of some surveillance products is Spector, software that can record every keystroke a user makes. It automatically takes screen snapshots each couple of seconds.

This is the type of software that resulted in 40 Xerox workers being sacked in 1999 for surfing forbidden Web sites. Today, Xerox routinely monitors the Web use of every one of its 85,000 employees around the world. New York-based Xerox spokesman, Bill McKee, told APC the surveillance is no secret. "Xerox workers have come to expect that they are being watched," he says.

And not only do employers like to watch, it appears we want them to. A recent poll of US workers found that 75% recognised the need for Internet monitoring and filtering at work. An Australian survey, *Internet Privacy And Surveillance*, conducted late last year by psychologist Dr. Monica Whitty, and Ray Archee, both from the University of Western Sydney (UWS), found that 74% of workers were happy to be monitored providing they were first informed by their employer.

Dr Whitty — who expressed concern that one in five people didn't know of their company's email policy or if they were being



monitored — says the problems created by Internet use at work can be solved by common sense.

"Studies from as far back as the 1950s tell us that a democratic style management is best for influencing workplace behaviour," she says. "Keeping an eye on people is not the answer. If we treat people responsibly they will act responsibly."

Charles Heunemann, managing director of EIM software developer SurfControl Australia, which commissioned the UWS study, says employers should work with employees to establish policies about appropriate Web surfing.

"Those policies can even set times when personal surfing is encouraged, such as in breaks, or before and after work," Heunemann says.

Workplace authorities were shocked when a February 2000 survey of employers by law firm Freehill Hollingdale & Page revealed that 76% of Australian companies were monitoring employee emails. Of this number, 65% were doing it secretly.

John Corker, the Principal Solicitor for the Communications Law Centre (CLC) and manager of its Internet legal practice Oz NetLaw, says employers "can pretty much do what they like".

He relayed the tale of a woman who drafted an email at work to her partner telling him she was getting an abortion. She later changed her mind and deleted the email without sending it. But

Online shopping leaps near Mother's Day, Father's Day and Easter. Temptation proves too great for some during one-day cricket matches . . .

the software installed on her PC by her employer recorded the email and someone in the IT department had been snooping. Her secret got out.

"So we've come to the stage," says Corker, "where surveillance is not just invasion of action, but invasion of thought."

The Commonwealth Constitution gives the Federal Government the power to regulate "postal, telegraphic, telephonic and other like services". This power co-exists with regulatory powers in each state. The Commonwealth Interception Act prohibits the secret capture of communications passing over a telecommunication system except for law enforcement purposes.

As the Internet and most email systems operate through telephone lines, it could be argued the Constitution and the Interception Act already cover them. But it remains questionable that our current laws are adequate enough to regulate surveillance.



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As Corker explains: "The High Court of Australia has ruled that a conversation over a telephone, or data traffic sent across a communications network, can be regulated under Commonwealth laws. But the surveillance of the taped version of that phone conversation, or the stored version of that email on a server, is subject to state laws. The difficulty is in establishing how state and federal laws should work together."

In what is regarded in Australian legal circles as the benchmark study into this area, the NSW Law Reform Commission (LRC) report of December 2001 made 121 recommendations to the NSW Parliament. They included the idea that new laws should not be device specific, to ensure that all types of surveillance are covered — by police, investigators, employers or the media.

BANDWIDTH DRAIN

Non work-related Internet activity can also have a devastating effect on a company's bandwidth. Employees who download music, pay bills online, play games or just browse the Web impede the work-related activity of colleagues.

The bandwidth problem becomes acute during periods of personal emailing peaks at work. Servers often crash on Valentine's Day and around Christmas. Online shopping leaps near Mother's Day, Father's Day and Easter. Temptation proves too great for some during one-day cricket matches, the start of the footy season, and during special events like the Winter Olympics and the World Cup.

SurfControl's Charles Heunemann says: "One person watching

► John Corker: says that employers can do "pretty much what they like."

"HUMOUR" FILE NO LAUGHING MATTER

In a recent case in Perth the Western Australian Industrial Relations Commission (WA IRC) warned employers they needed to be precise about their definitions and actions. Bank West sacked Alan Wilmott, a Lotus Notes programmer, for storing "offensive and inappropriate" emails in a folder he had marked "humour". The emails — which depicted acts of sex — were cartoons that the WA IRC says were "dirty jokes one might find in the possession of schoolboys" rather than pornography.

The Bank's email policy states that "users must not store files, send messages nor access sites which are offensive, indecent, obscene, menacing, violent, or abusive; pornographic, obscene or contain suggestive material; or could otherwise be considered objectionable."

Wilmott admitted he knew that storing pornographic images could lead to termination. He says he knew of the policy and its consequences. However, he says he did not consider the contents of his "humour" file to be pornographic.

The WA IRC agreed. It found that while the email policy prohibited "offensive material", there was no explanation as to what the bank considered such material to be. The WA IRC says Wilmott's termination was harsh and that an appropriate penalty would have been counselling or a demotion for a short period of time. Wilmott was awarded more than \$3,000 in compensation.

He would have been re-instated only he chose to leave Perth for London where, he said, he would command a better salary.

a live feed would drain more than 50% of the bandwidth within most small-to-medium enterprises. Larger organisations — those with a 1-2Mb connection — could have it clogged if just 10 people logged on to a live feed simultaneously."

SurfControl also says the list of email messages with graphics or a joke attached has grown by 650 percent since Christmas 2000. Network administrators interviewed for this story say April Fools Day is no fun for them.

But the jokes will continue, of course. Many of them will be sexist and graphic. Email boxes will fill with spam; time and bandwidth will be pissed away; company intelligence will sneak out the door; rogue employees will commit acts of sabotage — more jobs will be lost.

And while we muddle through the maze created by human frailty and the continued incompatibility of technology and the law, we'll be reminded of those words of Marshall McLuhan in the 1960s: "We shape our tools, and thereafter, our tools shape us." ■





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INFECTION PROTECTION

Protecting yourself from viruses is easy. Don't swap floppy disks, don't run EXE files from your email and you will be alright. Or will you? Unfortunately, as recent email virus alerts have shown, viruses can crop up anywhere. From supposed pictures of Anna Kournikova, mysterious .VBS files in Outlook through to games and cool utilities that contain that little extra surprise (such as trojan horses). Even surfing the Web can be risky as viruses can download along with the ActiveX or VBScript code of the Web page.

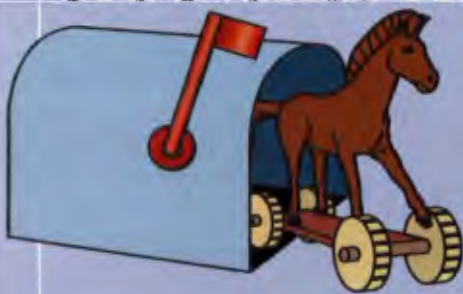
Viruses even appear in supposedly safe file formats such as Adobe PDF (<http://www.sophos.com.au/virusinfo/analyses/vbspeachypdfa.html>) and Macromedia Flash files (<http://www.sophos.com.au/virusinfo/analyses/swffm926.html>).

The only way to protect yourself against viruses is to obtain, install, use and regularly update anti-virus software that files and keeps a watch over email and files coming from the Internet.

As Internet usage becomes more widespread — especially with always-on broadband or cable connections — vendors are now bundling their anti-virus tools with firewalls, privacy protection, wireless filtering (for PDAs) and anti-spyware utilities to protect against the latest virus threats.

Anti-virus software works by scanning files to look for certain strings of bytes, known as virus signatures. These virus signatures are obtained by analysing the virus code using a debugging utility to determine what the virus does and whether it is encrypted or compressed in any way. The virus code is then disassembled to view each of the individual instructions and, from experience,

HOW A TROJAN-DELIVERED VIRUS WORKS

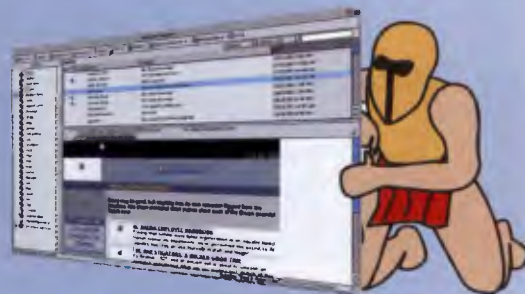


Step 1) User receives email attachment that purports to be a utility, game, joke, picture or screen saver



Step 2) User runs program attachment or opens email and unwittingly launches virus.

Step 3) Virus code either executes immediately or modifies system to run in the background and wait for trigger.



Step 4) Virus code, when activated, either damages the machine to be exploited by hacker for remote control, theft of data, passwords or to launch an attack.



the "virus-like" instructions are then extracted and used to generate the signature. As well as looking for specific signatures, the software uses algorithms to detect virus variations or mutations that attempt to avoid detection by replacing instructions with others that are functionally equivalent but of a different appearance.

As new viruses are discovered in other types of files, the same procedures for extracting the virus signatures are followed when the scanning engine is updated to look for viruses in these files.

Independent testing carried out by the Project of the University of Magdeburg and GEGA IT-Solutions GbR (www.av-test.org) shows that all of the major vendors achieve very high detection rates for published viruses. The real differences between the packages are the user interface, cost of software, ease and cost of updating and bundled extras.

An ideal antivirus package should be one of the "set and forget out" of the box variety. You should be able to load the package, run through a setup wizard and then forget it. Making changes to the software setting should be easy and, as far as possible, automatic.

All of the packages have a setup wizard that guides you through the basic configuration steps, although there is quite a difference between packages should you wish to locate specific functions. Norton's interface is well laid out with all functions clearly accessible from menus and buttons.

Although McAfee is just as powerful as Norton with virtually identical functionality, you would not know from the interface since many functions are buried under several menus (for example to set scheduled scanning you need to access the pick a task button, then Change my VirusScan settings).

Both Trend and Vet/MyeTrust's interfaces are clear and uncluttered allowing easy access to key functions without having to ferret around to find them.

Antivirus software consists of two programs: the antivirus software itself (akin to a control panel) and the resident scanning engine. The resident scanning engine stays in memory and intercepts attempts to open files until it has checked them against the table of virus signatures.

If a virus is detected the engine alerts the user and

VIRUS PROTECTION TIPS

1. *Since many viruses are now delivered by email, do not open any emails from people who you don't know.*
2. *Watch out where you download software from WareZ sites and other dubious sources — they can contain viruses.*
3. *Be careful with email attachments, even from people you know, since they might be infected with a virus.*
4. *Enable macro virus protection on Word and Excel and do not run document macros unless you expect them to be there.*
5. *Pay close attention when downloading ActiveX or Java components from Web sites, since they may contain viruses or malicious code.*

depending upon the package gives the option to clean the file, quarantines the file (puts it in a protected area of the hard disk for cleaning or submission to the software vendor for analysis) or blocks access to it.

Norton, PC-Cillian and McAfee give the user a full range of options as to what should be done when a virus is found, whereas Vet and MyeTrust only have the option of automatically cleaning, deleting or blocking access to virus infected files (no quarantining here).

The software also keeps a log of all infections and monitors the status of the system in the background to ensure that viruses haven't slipped through to infect files on the hard disk. All packages considered can be set to automatically schedule scans of the hard disk, or, you can manually initiate a scan on demand.

Since antivirus software relies upon virus signatures to detect and clean viruses, it is vital that these signature files (and the scanning engine) are kept up to date, otherwise the software will not detect any new viruses coming in.

The best anti-virus software can be configured to automatically download updates on a regular basis, although there may be a charge for updates.

Vet's updates are the most expensive with an annual charge of \$42.90, although this fee is inclusive of unlimited telephone technical support for the product and virus-related issues.

Both Norton and my-etrust include the first 12 months of updates with subsequent updates charged at US\$9.95 (\$19.49) per annum.

At this stage, neither McAfee nor Trend charge for updates.■

EDITOR'S CHOICE

The editor's choice award goes to Norton AntiVirus 2002, as it is the easiest package to setup and use. The default settings configure the package to automatic obtain updates over the Internet, repair infected files on the fly, clean and scan email as it is transferred and monitor hard disks for viruses. The user interface is clear, functions are easy to find, with all relevant information at your fingertips. Easy to use, configure and update makes Norton the winner.

McAfee VirusScan (\$89.95) is a close second with full virus scanning of files, email and Web content but not quite as "set and forget" as Norton AntiVirus as it requires manual configuration for scheduled scans, automatic virus removal and updating. It also includes a personal firewall. Details at www.mcafee.com or Network Associates on 1800 644 646

Vet Netsurfer (\$106.70) has less features but comes with unlimited telephone support for both program usage and virus infection issues. Details and online purchase at www.vet.com.au or phone 1300 364 750

Trend PC-Cillin (\$89.95) is also a full-featured product with wireless PDA anti-virus and personal firewall. Details at www.trendmicro.com.au or phone (02) 8876 5678

Norton AntiVirus 2002
Contact Symantec Australia
Phone 02 8879 1000
Online www.symantec.com.au
Price \$109



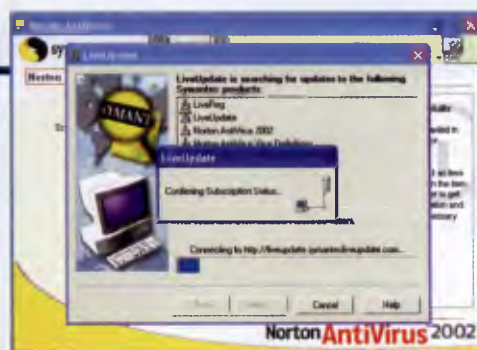
SYSTEM RESOURCE UTILISATION

The amount of memory consumed by the products varies depending upon what tasks are in memory at the time. The most resources are utilised when the program is in memory conducting a full scan or downloading updates from the Internet. Resident protection (which runs in the background) uses considerably less resources.

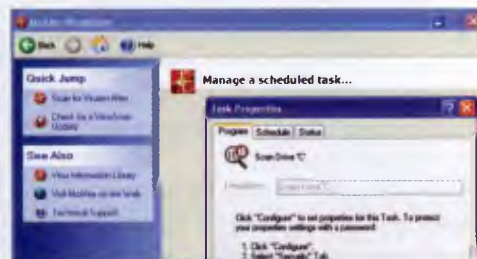
We tested by benchmarking a standard Windows XP clone with 128Mb memory and a PIII-500 processor and measured the memory utilisation without the software (our baseline of 70.5Mb) then with the software resident and loaded whilst scanning for viruses.

Irrespective of the amount of memory required by the package, Windows XP will automatically manage the memory, swapping unused memory out to disk, which is why the memory figures will vary over time or depending upon your configuration.

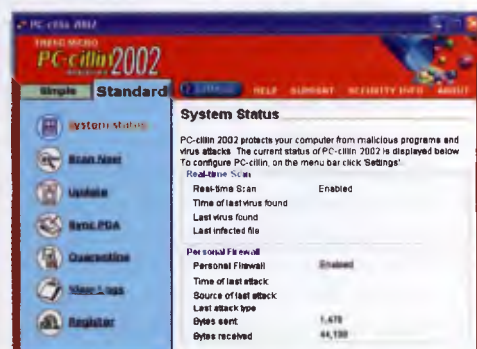
You will not notice the impact of the resident software unless you are running on the absolute minimum memory and processor requirements for your operating system and applications.



Good anti-virus software should be easy to update with automatic tools, such as Norton Live Update.



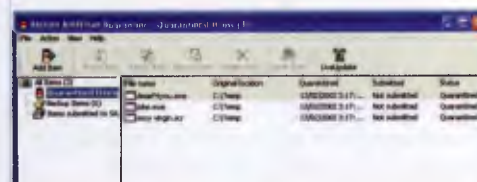
Regular scheduled scanning of the hard disk ensures that viruses have not slipped through undetected.



Anti-virus software should be easy to use and configure, providing with all of the information you require on a single screen.



If the software is unable to clean a file (in this case because the disk was protected), it should alert the user and record info in a log file.



Quarantining stores infected files on a hidden part of the hard disk for repair or giving to the vendor for further analysis.

PROGRAMS WE TESTED

McAfee VirusScan 2002
My-etrust EZ
Norton AntiVirus 2002
PC-Cillin 2002
Vet Net Surfer

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THE GATEKEEPER

Andrew Christie regards himself as quite computer-literate. A lawyer by trade, he understands the need to avoid storing sensitive client information on his workstation, but he does have some personal data on his hard drive that he'd rather not find plastered across the Internet.

In the process of upgrading to BigPond Broadband ADSL, Christie agreed to let APC test his Windows ME computer in order to demonstrate just how exposed he was.

First stop was Steve Gibson's Shields Up! Site (www.grc.com) and sure enough, the site could interrogate his machine, obtain its name and details of open ports without Christie being any the wiser. Just to prove that it wasn't a fluke we also checked out PC Flank (www.pcflank.com) and the report card was similarly unflattering. With his browser leaking information about him wherever he goes on the Web, and ports ready for Trojans and hackers to take advantage, Christie's PC was very insecure.

He didn't need any convincing to rip out his copy of Norton Internet Security 2002's Personal Firewall and install it straight away. We allowed the software to perform a standard install, then re-checked his machine. This time Christie was feeling safer since Shields Up! reported that his machine was not visible (according to the probes it didn't even exist, which is the ideal result) and the PC Flank report card considerably improved.

Despite ISPs underplaying the need for personal firewalls, our tests have shown that unless you like sharing your personal information with a couple of million new friends across the Internet, a firewall is very good investment. Given that many trojans and hackers exploit open ports on machines, it is surprising that neither Telstra nor Optus provide people with any information about firewalls until the customer signs up and connects.

Even worse, one of their call centre staff blithely advised us that firewalls are totally unnecessary since hackers aren't

HOW A FIREWALL OPERATES



Step1) The firewall is installed between your computers and the Internet. Or, if software is installed on your computer to intercept data going to and from the Internet.



Step3) The user programs the firewall to accept or reject packets with a table of rules, which work like a filter.



Step2) The firewall acts as a gatekeeper determining what Internet packets of information can enter or leave your computer.

Step4) The firewall also monitors the Internet connection, blocks sensitive information leaving and alerts the user if an attack is attempted.



interested in ordinary people!

Telstra has advised their customers of the need for firewalls via email in response to security alerts, and provide information in the subscriber-only areas of the site. Their technical helpdesk does not support any firewall software nor do they recommend a specific package, although there are links to where firewall software can be downloaded. Stuart Gray of Telstra has confirmed that whilst firewalls are recommended for broadband users, Telstra staff will not install or configure firewall software.

Some smaller ISPs, such as Connexus (www.connexus.net.au) do provide customers with information kits which detail basic risks and security issues and will install and configure firewalls for customers for an additional fee. Greg Holloway of Connexus recommends that any home user connected to ADSL invests in a software firewall, such as Norton Personal Firewall, which is supported by their helpdesk team. "Users, of course, can run any firewall that they choose, such as Zone Alarm, but our helpdesk can only support several selected packages."

Whirlpool (whirlpool.net.au), has several articles on the site advocating the use of firewalls and urging ISPs to better communicate the need for firewalls to their subscribers. Given the recent Code Red "worm" and other exploits, it is likely that firewalls will become a standard component of computer operating systems, following the example of Windows XP.

A firewall is either software or a hardware device that sits between the Internet and your Internet applications. It acts as a sentry to determine what types of Internet traffic (TCP or UDP packets) will be allowed to travel between your computer and the Internet. A software firewall such as Zone Alarm, McAfee Internet Security or Norton Personal Firewall runs on the computer connected to the Internet and protects only that computer, which makes it adequate for home use.

Hardware firewalls sit between the Internet modem and router and your network hub, making them ideal if you have several computers connected to the Internet. Generally a hardware firewall is the cheaper option if you need to protect multiple computers since you only need to purchase and maintain one device rather than multiple software installations.

In its simplest form, a firewall identifies certain types of information by the TCP/IP port number, for example, port number 139 is used by Microsoft to identify Windows machines. The firewall then works through a table of rules to determine whether to discard the packet or pass it on to the network or Internet applications. For example if you do not want your machine to identify itself to everyone on the Internet, you would tell you firewall to block any connections on port 139. This is the type of

CHECKING YOUR OWN SYSTEM'S SECURITY

Whether you're on dial-up or broadband, you can see just how vulnerable your system is for yourself by visiting Steve Gibson's Shields Up site (www.grc.com) and the PC Flank site (www.pcflank.com).

Just like a hacker, these sites probe your machine and report on the status of commonly exploited ports and privacy leaks. PC Flank also checks your system for TCP attacks, browser security issues and common Trojans.

At the end of the tests the vulnerabilities are displayed in a report along with tips on how to reconfigure your system to improve security.

firewall that is built into Windows XP and whilst better than no firewall at all, is to firewalls what Notepad is to word processing!

More sophisticated firewalls, known as application layer firewalls, scan the contents of the packets to identify Trojans or attempted security exploits whilst still permitting legitimate information packets through (such as email). As well as protecting your computer, these firewalls do an excellent job of logging attempted attacks, preventing confidential material (such as credit card numbers) from leaking out onto the Internet and protecting you from viruses (since many have built in antivirus software), and offer a lot more peace of mind to the user.

All firewalls, irrespective of type, rely upon a table of rules to protect your machine. These rules are the basis for all actions taken by the firewall and may need to be customised, depending upon which applications you run. This customisation reflects the specific ports and types of data packets required by your applications. Get the rules wrong, and your applications may break!

It is also vital to constantly review and update the firewall's rules table, particularly when you install a new application. This provides a better defence against new exploits and Trojans. Because of the ongoing nature of such a task, many firewall products include subscription to a vendor provided update service. Such a service automatically updates via the Internet your firewall's rules table as exploits are discovered. Although there may be an attendant subscription charge (usually annual), this is money well spent as an out-of-date firewall leaves you vulnerable. ■

EDITOR'S CHOICE

Effective, easy to set up and free makes Zone Alarm the Editor's Choice for firewall software. Zone Alarm develops its rule base automatically as you use it, avoiding any complicated setup or maintenance and is one of the few firewall programs as of the time of writing to pass the PC Flank stealth test.

Zone Alarm

Contact: Zone Labs

Phone: 0011 1 415-341-8200 (US West coast)

Online: www.zonelabs.com

Price: Free for personal use. Pro Edition US\$29.95.

PROGRAMS WE TESTED

eTrust Ez Armor

Norton Personal Firewall 2002

Zone Alarm

McAfee Internet Security

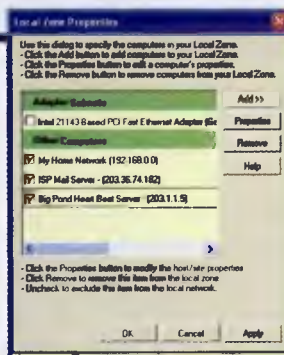
SETTING UP

Depending upon the firewall software that you use, setup can be as simple as answering prompts as the firewall runs, being guided through a wizard, through to programming firewall rules manually.

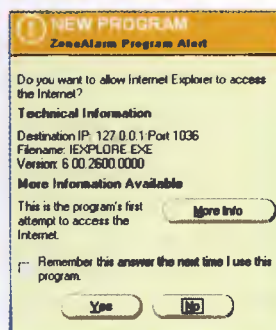
In this example we will walk through setting up our Editor's Choice, Zone Alarm from Zone Labs. Irrespective of what type of program you use, some understanding of firewalls and TCP/IP ports is extremely valuable.

1. Do some research as to what firewalls do and how you want to configure your firewall to protect your machine. There is a trade off between securing your machine to the maximum extent possible and still being able to effectively use Internet applications. Zone Alarm has two zones which can be independently set up — the Internet Zone for untrusted machines on the Internet and the Local Zone which is for trusted machines (such as your ISP's mail server) and machines on your home network.

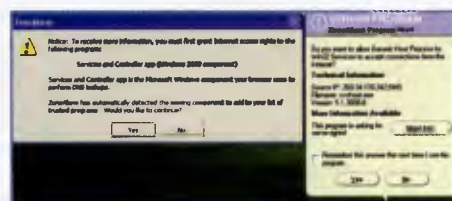
2. Click on the Advanced tab to specify which machines belong in the local zone. If you have two network adaptors (one for your home network and either a dial-up or DSL adaptor for the Internet) check the home network adaptor to put all of your home network in the trusted zone. You should also add



machines that provide services (such as your ISP's mail server, the Big Pond Cable heartbeat server, software update servers and Microsoft Windows Update sites).

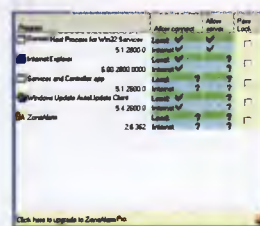


3. List the programs you use which require access to the Internet. As you use them, Zone Alarm will alert you that this program is attempting to access the Internet. You can then click Yes (and check the remember the answer box) to grant permission for this program to access the Internet. Some common programs include Internet Explorer, Outlook and Microsoft Office components.



4. As you start to use Zone Alarm, it will log frequent alerts as it learns which programs and components require access to

the Internet. Even if your machine is not running any server processes (such as a personal web server), you may still receive alerts since some programs provide information to machines on the Internet. If you need more information click on the More info button.



5. You can review which programs have been granted access to both the Internet and the trusted Local Zone by clicking on the programs tab and decide whether to permit or deny the program access to the Internet either as a client or server.



6. Regularly inspect the alert logs to help you identify where connection attempts are coming from. If you find that you are unable to access a particular web service (such as a game server), you may find that you have inadvertently blocked access. The logs will show if this is the case.

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CYBER VOYEUR

How many Internet-enabled applications do you have on your machine? Three, four, maybe half a dozen? That's what IT professional Andrew Yeung thought. However when APC ran Norton Internet Security 2002 on his Windows Me computer, Yeung was shocked to find over one hundred applications with the potential to exchange information via the Internet. "I can't believe that so many applications have the ability to communicate without me knowing about it!"

Whilst most of these applications only contact the manufacturer to check for updates or obtain extras, there were others that Yeung did not recall loading and had no idea why they needed Internet access. It is likely that if you scan your machine, you also may find some Internet-enabled applications that you don't recognise. Whilst some of them may be system processes or components of other software, others may not.

These other applications, known as Spyware, log and report your web browsing and computer usage habits to marketers and advertising agencies. Unlike the applications that you intentionally install, Spyware installs itself secretly or downloads itself as part of a web page to work silently in the background.

Spyware is usually bundled with advertising-sponsored software (software provided to you at no charge) in return for it being able to send advertising material to your machine or to collect information about browsing habits. There is nothing inherently wrong with this business model since television, radio, and even to a large extent magazines, such as APC, rely on advertising to cover most of the cost of production.

The only problem with Spyware is that the software developers who use this revenue model prefer to pretend that their software (or web content) is "free" rather than discouraging people from

HOW SPYWARE WORKS



Step 1) User downloads application with spyware and installs it.



Step 3) Spyware home organisation sells information to marketers. If user registered application, the data can be used to build a profile.



Step 2) Spyware programs run in background and reports Internet usage or other information (music listened to) to spyware home via Internet.



Step 4) Anti-spyware software scans hard disk for known spyware applications and gives users the option to uninstall them.

downloading the software in exchange for being blasted with ads or providing information to marketers.

Since Spyware needs to install itself in a way that cannot be easily detected — so that it doesn't put off users running the main software application — it will often modify Windows startup files (such as WIN.INI) or the registry and run as a service. Consequently it cannot be detected by pressing CTRL-ALT-DEL and looking at the applications list under Windows XP.

Unfortunately, not all Spyware is well written. In addition to consuming your bandwidth, in some cases it can cause Windows to break. For example the Save Now application which comes with BearShare and Go!zilla, causes Internet Explorer to crash out with invalid page faults or illegal operations, effectively preventing you from using your system normally (<http://support.microsoft.com/default.aspx?scid=kb;en-us;Q302463>).

Another problem with Spyware is that it steals your computer and Internet resources, slowing down your machine and costing you downloading time and bandwidth. Whilst the amount of information transferred by the Spyware is relatively small, there is little doubt that as broadband uptake increases, Spyware will become more sophisticated and bandwidth hungry. In the quest for the best "advertising experience", Spyware companies will compete with each other to provide as close as possible to broadcast quality (streaming video) commercials utilising your bandwidth and clocking up your per megabyte ISP charges.

However, the main problem with Spyware is that it invades your privacy by effectively stealing your personal information without your consent. It is the electronic equivalent of a peeping tom, that peers through your window and watches you whilst you use your computer. Whilst most Spyware still only sends back generic data that cannot be tied to a specific user, it will only be a matter of time before more sophisticated Spyware provides marketers with a full personal profile that is linked to your email address. Look forward to personalised spam, coming to a mail box near you!

This personal invasion of privacy is not speculative since Real Audio have unsuccessfully tried this stunt back in 1999. Real Audio (www.real.com), provides the free Real Player which allowed users to play streaming media and listen to their own CDs through their computer. It required you to register the program (to receive free updates etc.) but it also tagged the program with a unique identification number which identified each user. Every time you listened to music, whether off the Internet or from your CD collection, Real Audio player would query the Real Audio database to provide song title information. However, embedded in the encrypted query was details of what you were listening to, what

TIPS TO AVOID SPYWARE

- *Carefully read the license agreement and privacy statement on the vendor's site or software to confirm the information they obtain and use.*
- *Check whether the software is known Spyware by querying the Spychecker database.*
- *Be wary of shopping helper or bargain hunting utilities since these are often Spyware*
- *Don't download or install "extras" along with the software since the extras may be Spyware.*
- *Never give personal information or your email address to applications that you download from the Internet*
- *Monitor your system with anti-Spyware utilities or Zone Alarm to block any suspicious Internet activity.*

music files you had on your computer and what music you downloaded from the web. All of this identification, together with the unique identification number, was stored by Real Audio in a database. It doesn't take much imagination to work out why such a database would be valuable to music marketers. Thankfully this Spyware was discovered and Real Audio discloses what information is collected in their online privacy statement.

It is not an uncommon practice for Spyware to encrypt data or even send it with your own information from the Internet so that you don't notice modem or router lights blinking for no reason. The best way to detect Spyware is to closely monitor your Internet connection with a personal firewall (such as Zone Alarm) or packet sniffer.

If you suspect you have inadvertently downloaded Spyware, utilities such as Ad-Aware or Pest Patrol can work like a virus checker to scan your hard disk for known Spyware files and provide assistance with removing the pest. This is particularly useful for cleaning up after an application which allows you to uninstall itself, but leaves the Spyware running on your machine.

Since it is not always possible to remove Spyware without breaking the main application, utilities such as Silencer may be used to disrupt the communications, effectively rendering Spyware useless.

The best way to avoid Spyware, of course, is not to download it in the first place. This is where a little utility such as Spychecker is useful since it allows you to check whether an application you download is infested with Spyware before you install it. ■

EDITOR'S CHOICE

The choice was very simple, since out of all the programs we looked at, only the Ad-aware software from Lava Soft actually detected and removed all of the offending Spyware.

Ad-Aware

Contact Lavasoft

Online www.lavasoftusa.com

Price Free for personal use. Pro Edition US\$15.

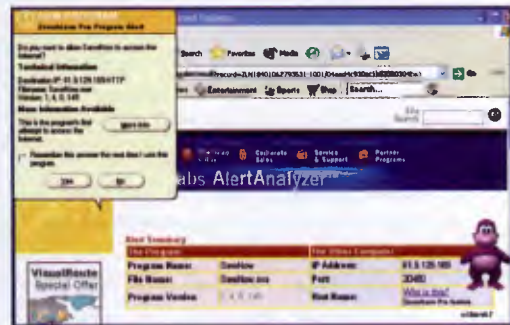
SOFTWARE TESTED

Spychecker

Pest Patrol

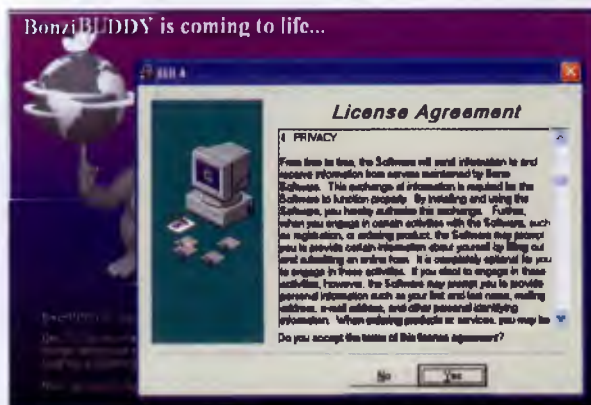
Ad-aware

Zone Alarm Pro



"Free" utilities such as Bearshare also include Spyware which you may not be aware of, such as Save Now.

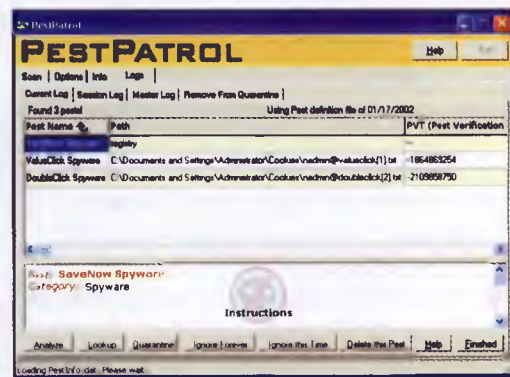
SETTING UP



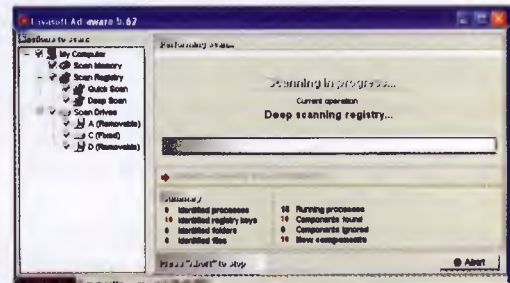
Carefully read the license agreement and privacy policy since it should detail the information the vendor can obtain and how it can be used.



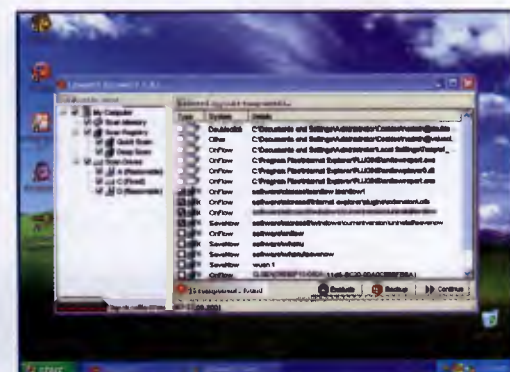
He may be cute and purple, but as well as telling you about him, Bonzi Buddy also tells Bonzi a lot about you too!



Anti-spyware utilities such as Pest Patrol scan the hard disk for Spyware, it's just a pity that Pest Patrol locked up on us twice!



Ad-aware by Lavasoft scans the hard disk, memory and registry looking for Spyware.



After Spyware is detected, Ad-aware allows you to automatically remove it.

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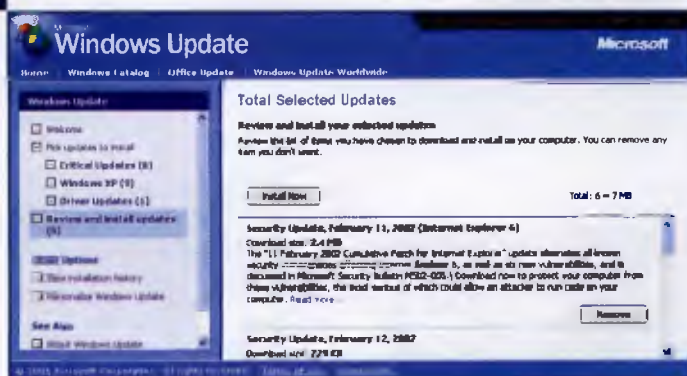


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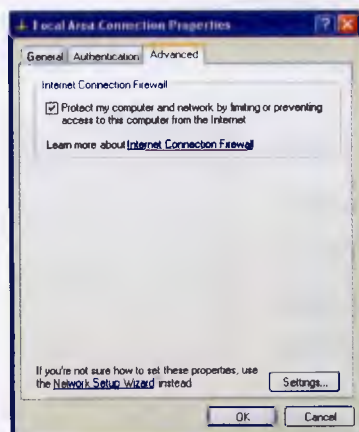
LOCK YOUR WINDOWS

YOU'D THINK A NEW INSTALLATION OF WINDOWS XP WOULD BE SECURE ENOUGH FOR DIRECT NET CONNECTION. NOT ACCORDING TO THE TESTS WE HAVE CONDUCTED USING SHIELDS UP AND PC FLANK! BUT DON'T SWEAT IT, JUST FOLLOW THESE SIMPLE STEPS AND YOU SHOULD BE SAFE



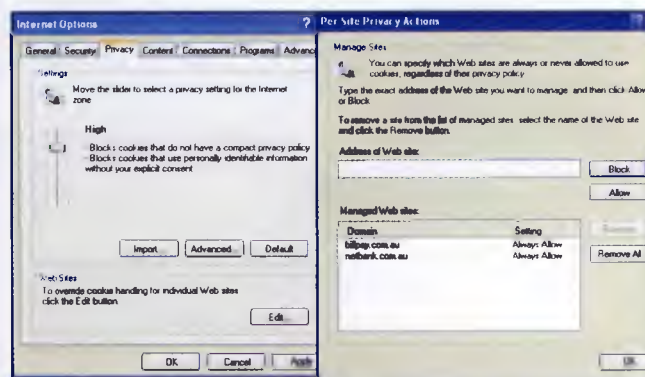
1. Update, update, update! Run the Windows Update utility on a regular basis since Microsoft regularly supplies fixes and patches to close security exploits.

2. Enable the personal firewall or, better yet, download and install our Editor's Choice Zone Alarm personal firewall. Windows XP contains an inbuilt personal firewall which provides basic protection against

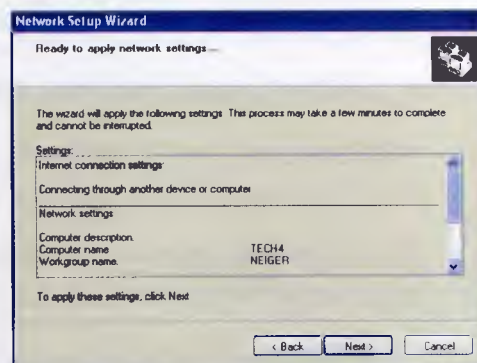


hackers. This can be enabled by going to Control Panel, Network Connections, Right clicking on your network connection (or dial-up network connection), choose properties, select the Advanced tab and check the Internet Connection Firewall box.

However since the inbuilt personal firewall provides limited protection you would still be better off downloading and installing Zone Alarm.

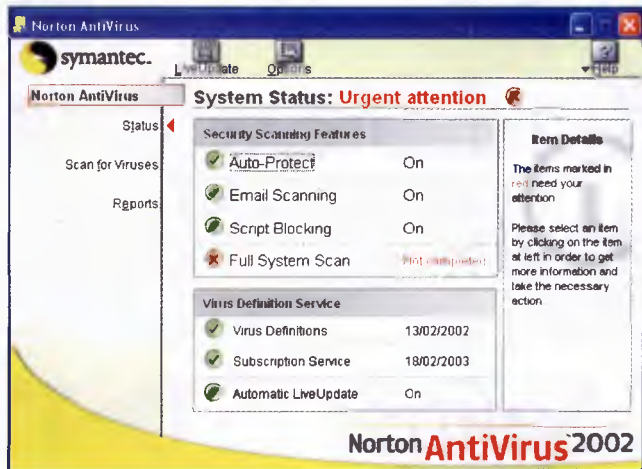


3. By default, Internet Explorer reveals lots about your browsing habits and happily accepts cookies that track your movements over the Internet or can potentially be used to launch an attack on your machine. Whilst some sites such as Internet banking and bill payment sites require cookies, if you want to remain anonymous, increase the security setting and specify which sites can use cookies.

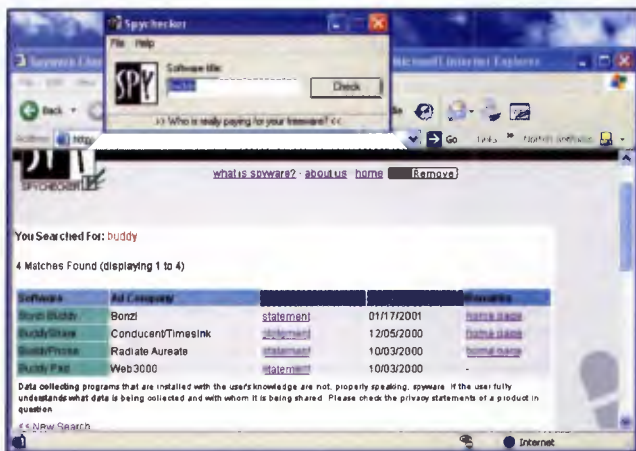


4. If your computer is connected to other machines on a home network you should also run the Network Setup Wizard by selecting "Setup a

home or small office network” from the network tasks on the right of the screen. This wizard will configure your home network and apply default security setting to make it harder for hackers to access your files.

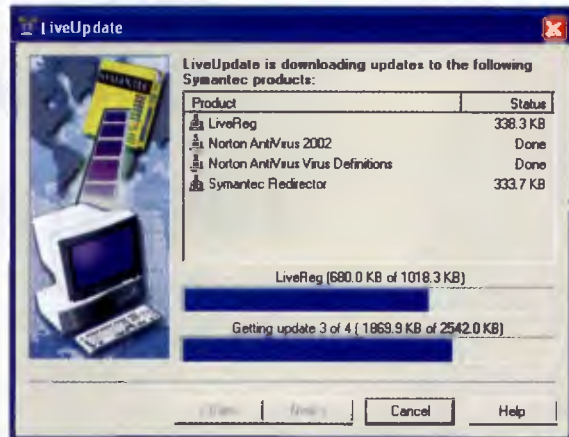


5. It's a nasty world out there! Even if you are scrupulously careful, chances are you'll either download, or be emailed, a computer virus. In this regard all versions of Windows, including Windows XP, leave you completely exposed as there is absolutely no anti-virus protection built into the operating system. If you use the Internet in any way, you will need to use an anti-virus product such as our Editor's Choice, Norton Antivirus 2002.



6. Unless you like broadcasting your browsing habits with marketers and spammers you need to make sure that you don't

have spyware installed on your computer. One of the easiest ways to check for spyware is to go to <http://www.spychecker.com/download.html> and download the Spychecker utility to see if any of the applications you have downloaded contain Spyware.



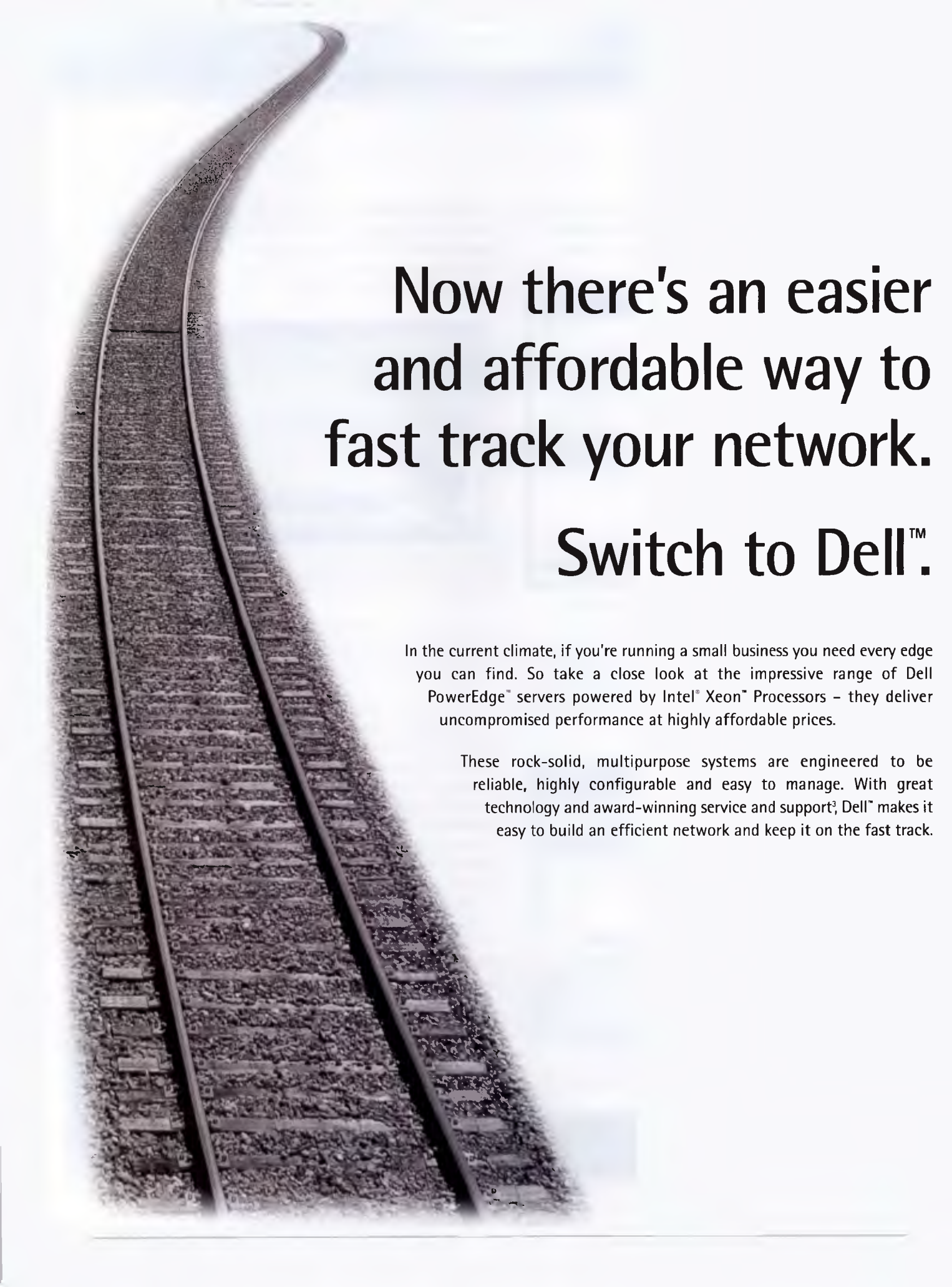
7. Security is not a set-and-forget affair. Remember to regularly run Windows Update and update your firewall software and antivirus package on a regular basis.

So, in seven steps, we have taken an insecure Windows XP machine and made it secure. Running Windows Update and installing the security patches protects the machine from known security exploits within the operating system.

The Zone Alarm firewall hides our machine from the Internet (if you can't see it, you can't hack it!) and gives us control over which applications access the Internet. We also increased the security of Internet Explorer so that we don't accept and reveal our cookies to anyone except our trusted sites.

The Network Setup wizard configures the network to only share files and printers with our home network rather than millions of "friends" on the Net whilst our anti-virus software protects us against downloadable and email viruses (do however keep it regularly updated).

By checking with Spychecker before we download stuff from the Internet, we can be sure that we don't give our browsing habits away without our consent. ■



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COMPAQ PROLIANT ML370G2

BY MATT OVERINGTON

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LAST YEAR, CHRISTINE RYAN ENTERED A COMPETITION AS PART OF CHANNEL 9's SMALL BUSINESS SHOW. THE PRIZE? A COMPLETE IT BUSINESS OVERHAUL TO THE TUNE OF \$20,000. AS PART OF THE REQUIREMENTS OF THE COMPETITION, SHE HAD TO EXPLAIN WHY HER BUSINESS, MAJOR DEVELOPMENT, SHOULD BE ELIGIBLE FOR THE SERVER UPGRADE.

Ryan's job was in the production of digital video and film, and her business was running on several outdated machines. Major Development was producing corporate videos, CD-ROMs and other training material for business, government, and educational institutions. As she had two part-time and three full-time employees, plus a number of freelancers, Ryan found that her IT infrastructure was well overdue for an overhaul. Her operating systems were outdated, she had no Internet presence, and only a single email address for the business.

As it turned out, she convinced the competition judges of her desperate need for an upgrade, and received \$20,000 of Compaq and Microsoft gear to help her on her way. She installed a Compaq ProLiant server, a CD-burner for producing CD-ROMs, and Microsoft Windows 2000, in addition to a workstation and a new notebook.

Almost immediately upon installing the server, Ryan noticed differences in her work efficiency and benefits in time and contact management. By using a database and having all the emails coming in through it, Ryan is now able to quickly and easily plan jobs. The hardware that she is now running is much more dependable, and her infrastructure has some headroom for her business to grow.

Ryan is running an automated daily backup of the most important work files on her network. As she is dealing with digital content on a daily basis, backup is vital. "If I'm working on a CD-ROM it is reassuring to know that everything gets backed up — because I would often forget to do it separately," she says.

The importance of having someone who knows how to configure your network is obvious — if your server goes



A SMALL WORKGROUP CAN GET AWAY WITH USING A REGULAR PC AS A SERVER, ALBEIT A BEEFED-UP ONE . . .

CAN'T I JUST PLUG IN MY DESKTOP AND USE THAT AS A SERVER?

While larger companies looking to expand will think of an enterprise server, the ideal solution for any group with up to 15 people looking to use a single computer is a workgroup server. Whereas an enterprise server is generally rack-mounted (so you can add and remove hardware components as required, without powering down the entire system), and runs on specialised, high-bandwidth capable hardware, a workgroup server is similar in appearance to a regular desktop PC, except with more powerful innards.

A server has to deal with several programs being executed simultaneously — if you are using a single machine as an instant messaging server, an email server, a file server, database server and Web server for double digit groups of people, that's a lot of balls for the computer to juggle simultaneously.

While modern workstations are powerful machines, server architectures are designed to handle the balancing of many operations at once, and are built on more robust platforms than desktops. While most users shrug off the occasional blue screen or system crash, the consequences of such instability on the businesses server can be serious.

A small workgroup can get away with using a regular PC as a server, albeit a beefed-up one, but bear in mind that eventually the performance of this slightly cheaper alternative to dedicated server architecture will wane. A computer multitasks in order to do several jobs at once — on each clock cycle, a small amount of processor time is allocated to each task that the processor must complete.

Intel's Xeon processor (built on the same technology as the Pentium 4) is designed for high-end workstations and low-end server applications. It features 512KB of Level 2 cache and Intel's Hyperthreading technology, which makes it better at multitasking than previous designs.

Essentially Hyperthreading enables software to split a single processor into two, so that data that is coming into the CPU can be more effectively handled and manipulated. The Xeon slots in below Intel's 64bit Itanium processor, designed for high-end servers and mainframes.

The Itanium has not been openly embraced by the business community. In fact, many high-end server administrators are waiting for the introduction of Intel's 64bit McKinley chip — presently scheduled for a June arrival — before deciding on an upgrade path.

down with a lot of important files on it, your business is effectively halted.

Ryan has thus far been managing administration of the server in-house using the staff that she was already employing. This is the most common way that a small business server will be administered — using existing resources as opposed to spending extra money employing a potentially expensive network administrator.

However, she is quick to talk of the negatives of running her business this way. "If something goes wrong with the server we panic, as our budget doesn't run to expensive computer consultants at this stage. So far we have been lucky and have been able to sort any problems out ourselves."

All in all, Ryan has been extremely happy with the direction that the server is enabling her to take her business. She is hoping to see a "big improvement in business overall this year."

Despite the fact that Ryan's is only a small business (operating in much the same fashion as a multitude of others around the world) the installation of even a simple office network aided productivity and streamlined her work systems.

She also has most of her outsourced costs — CD-production and potentially Web-hosting which are now managed on site — thus allowing more control over her business. Although the basic idea behind running a server is simple — to pool data in a central area where it can be accessed and worked upon by a number of people — the benefits go far beyond basic file sharing.

ADMINISTRATION

It is becoming increasingly common for small businesses to outsource their IT administration. This means those employed by the company can be paid to produce for the company. In this scenario, an IT technician is only paid when something goes wrong.

When you buy a server, you pay a service fee to a network administrator to configure and tailor your network according to your needs and demands. On a small network, this is vastly more cost efficient than paying a salary to a full-time network administrator, who will have nothing to do unless something goes wrong.

Most commonly, the onus is upon a member of the company with computer skills to step into the role of network administrator. As such, it's a good idea to have someone nearby who has an understanding of what you are trying to do before inadvertently installing a network with a prohibitive overhead.

The biggest advantage to outsourcing your IT requirements is cost. Once a network is up and running, you need a minimal amount of tweaking and general housekeeping to keep it that way. Provided it is never turned off — and someone knows how to clean files from the server and perform basic system maintenance routines — a server can run for years without being altered. By paying IT staff only when there is a problem with the system, you stand to save money (as long as only standard maintenance is required).

On the other hand, if a vital job is delayed because there is no network administrator who is available to come out and fix your problem at 4pm on a Friday afternoon, then your business can suffer. Further, many people don't like feeling that the integral parts of their business (the data on the server) are in the hands of someone who is not employed by the company.

This forms the most compelling reason to employ an on-site IT manager. Best assessed on a case-by-case basis, the main difference between the cost of employing a full-time professional and taking the outsourcing route will largely depend on the level of network maintenance your business will require.

BACKUP

You have successfully migrated your businesses contact lists, work data, and email to your central server. No workstation is used to store sensitive data. Everyone is working on shared files and office productivity is on the rise. Job accomplished? Think again!

This stage of development is indicative of the "paperless office" ethic, as most, if not virtually all of your business data, is stored on a magnetic medium as little 1s and 0s. The trouble with little 1s and 0s stored magnetically is that in certain unforeseen circumstances, they can prove easy to destroy or corrupt. Wave a powerful magnet near any magnetic disk and it will be scrambled, and all the data that you painstakingly entered is gone. If this somehow happens to all the data on a server, and it's not backed up, then you are in trouble. There are many ways to backup data; however the best and most commonsense solution for a server application is by automating the process.

Applications like Sun Solstice Backup 5.1 Server Edition are automated backup programs that can perform unattended parallel backups of servers to a range of mediums. They keep track of files that have been changed since the last backup and regularly update any that have been modified.

The most important thing to keep in mind is that you are backing up data just in case you have to call on it, so it pays to be selective with your media. If you are only backing up 200MB of data per week, then there is no real need to install a high-speed, high-quantity tape drive when a simple CD-RW drive would suffice.

Joining the more traditional storage formats of CD-RW, tape and other hard disks is the option of online storage, particularly for small concerns with limited workstation resources. Despite the medium's susceptibility to physical damage, data held on the likes of PCs, PDAs, notebooks and even mobile phones aren't typically subject to the same care as server data. An

BY PAYING IT STAFF ONLY WHEN THERE IS A PROBLEM WITH THE SYSTEM, YOU STAND TO SAVE MONEY.

THE HARDWARE THAT SHE IS NOW RUNNING IS MUCH MORE DEPENDABLE, AND HER INFRASTRUCTURE HAS SOME HEADROOM FOR HER BUSINESS TO GROW.

option for mobile users (although office-bound ones can benefit too) is to use a storage service provider (SSP), like StorageNetworks (www.storagenetworks.com) or locally-based Hojo8 (www.hojo8.com) and backup data to a server that is managed off-site.

There was a boom with the launching of SSPs between mid-1999 and early-2000, and although most of the start-ups failed, and were sucked kicking and screaming into the dotcom void, the idea is still a good

one. Because the data is stored over the Internet, mobile users can access it from a hotel in Singapore just as easily as they can at head office, and the data is also protected from physical damage, like fire.

SOFTWARE

When installing a new server on an existing network, many applications used over the network may require an upgrade. Not all servers run on Windows (indeed, many are running on Linux



Christine Ryan, head of Melbourne-based Major Development has found her new server to be the key to her IT infrastructure.

CASE STUDY: CHRISTINE RYAN



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INSTANT MESSAGING, SQL, MAIL, WEB AND FILE SERVERS ARE ALL EASY TO FIND FOR LINUX, AND BEST OF ALL THEY'RE FREE.

or Sun's Solaris), most prominent small business server software applications are all based on Wintel machines. If you intend to run a server version of a business application, such as Attaché, then you will need to buy a user license for each client machine on your network.

Another option is to buy an entire suite, like Small Business Server, which includes versions of Windows 2000, Exchange 2000, Outlook, FrontPage 2000, ISA Server 2000, SQL Server 2000, and some extra utilities. This is a relatively inexpensive way to end up with an entire suite of applications that you can run on your network, however buying a bundle means that you can end up paying for functions that you won't ever use.

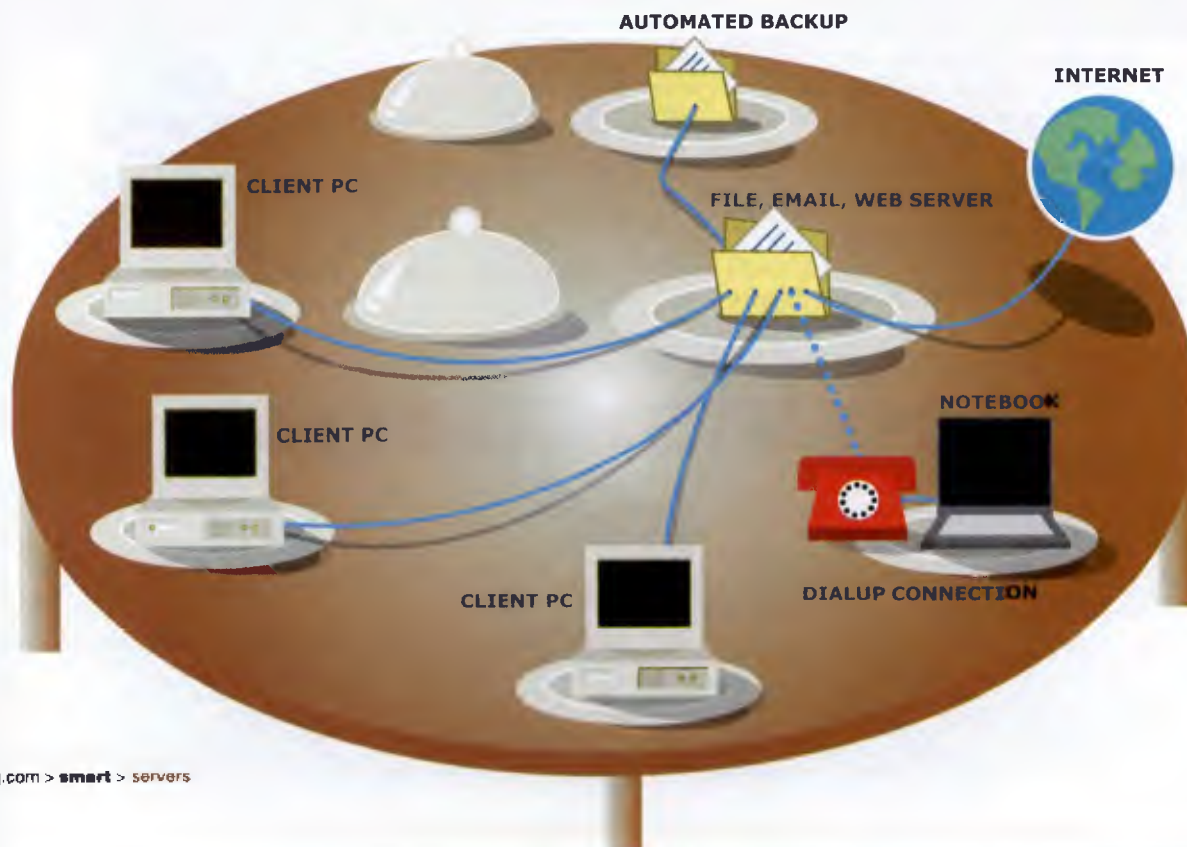
The best way to go about stocking up your machine with software is to write a list of what you need to do, and the applications you will need to get them done. If you find that the applications you require can be found in a marketed package, then you are best off going for that one. Or, you might be best off buying an individual server version of a program like Lotus Notes.

LINUX SERVERS

It is becoming common to install a type of Linux onto a server, as the OS is well designed to handle multitasking. And a range of server applications exist to help you run a Linux box at the hub of your office network. Instant messaging, SQL, mail, Web, and file servers are all easy to find for Linux, and, they're free.

Linux has justifiably become a popular choice for servers. Currently, over 60% of the world's Web servers are running on Apache — a Linux-based serving application. One flavour of Linux, Redhat, even offers certification (RHCE) for ebusiness, security and embedded technologies. Several major vendors, such as Dell and IBM, are retailing servers with Linux preinstalled and this could be a good path to follow if you are looking to keep down the total cost of migrating to a server environment and desire the rock solid system stability and security that established Linux distributions are renowned for.

What those opting for a Linux-based server over a Windows platform tend to miss out on include file-level security, the familiar Windows interface, and Microsoft's level of hardware support. ■



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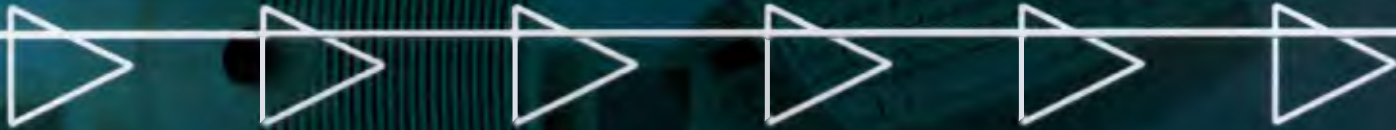
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X BOX

One of IBM's most flexible server solutions is their xSeries of eServers. Aimed at small-to-medium business, the x232 is capable of running a Pentium III-s CPU, which is equipped with 512KB of Level 2 cache instead of the regular Pentium III's 256KB. This leads to less memory latency and bottlenecks — a discernible benefit if you intend to have a reasonable amount of users putting a lot of strain on your server.

As has been mentioned before, network downtime is a server-reliant business' worst nightmare. Constant access to the server PC is one of the top priorities for any network. IBM has included a number of troubleshooting and diagnostic features that will help network administrators keep the system functioning as long as possible. The x232 features Predictive Failure Analysis, which, by monitoring the status of fans, drives, or power supply, is able to alert the system administrator that something is about to go wrong so it can be fixed

quickly. IBM has also included Light Path Diagnostics on the server, which consist of a panel of LEDs located on the motherboard (with a single status LED on the case) that mark the status of fans and DIMMS. If one fails, it can immediately be replaced without the need for testing.

We'd like to think that eventually every small business will flourish, and so eventually you will probably need to connect extra people and services to your server, which will by then struggle to keep up. Like the Compaq ProLiant, the x232 is a two-way server, meaning that you can use it to manage other servers that can be dedicated to a single task, such as serving a database, or Web site, although this requires the addition of the PCI Remote Supervisor Adaptor. The x232 has 2 64bit PCI slots, so you can run a gigabit Ethernet. By default, 10/100base Ethernet is provided on board, which frees up the PCI slots for add-ons.

The x232 is in the same category of server as the Compaq; powerful for small business, yet able to expand enormously to handle simultaneous use by dozens of people and controlling other servers on the network.

Contact IBM

Online www.ibm.com.au

Phone 132 426

Price \$4,499

Verdict ■■■■

Dell PowerEdge 500SC

THE EDGE

For server, Linux is an excellent operating system because of its robust nature and the fact that the code is open source means security holes or exploits are identified and remedied by the massive online community with a speed even the Microsoft juggernaut cannot hope to match. Further, factor in the ready availability of free, code mature and stable software that can be used to run your network. Apache is an excellent example, with more than 60% of the world's Web servers running off this powerful Web server (see www.netcraft.com/survey).

IBM, NEC and Dell are among several OEMs currently bundling their servers with installations of Linux as an alternative to Windows to drive small (and medium) business. RedHat is Dell's chosen distribution, as the installer and the Gnome interface is more user-friendly than some alternative distributions. There are a number of powerful applications that you can

download and install onto a Linux server for free, meaning the total cost of installing the server will go towards hardware and paying someone to configure it for you.

The Dell is driven by a 1.1GHz Celeron with 256kb Level 2 cache and 512MB of SDRAM running on a 133MHz FSB and the Intel ServerWorks chipset. Of course, as the server isn't intended to play games, there is only 64-bit and 32-bit PCI support, and none for AGP.

Unlike the Compaq ProLiant, the PowerEdge doesn't feature support for a RAID array to safeguard against data loss. Unfortunately the onus is on you to perform your own data backups either by installing a tape drive, CD-RW drive, or some form of network attached storage. While this is not a problem for a competent network administrator, it is an additional concern that you will have to address if you venture down this path.

Opting to run Linux is a wise choice for anyone looking to install a reliable server on a network at a low cost. Much like with Windows platforms, someone working on-site with a rudimentary awareness of the operating system is recommended in case of the unexpected.

Contact Dell

Online www.dell.com.au

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SUN SHINES

The Cobalt Qube is a fine solution for small businesses of up to about 20 people. Variations on the Qube have been available under several guises over the years, before Sun acquired Cobalt and applied their own brand.



The Qube is intended to function as an Internet gateway as well as a mail, file archive, Web or discussion group server. The hardware consists of a RISC processor, 20Gb hard disk, two 100-base network cards, a v.90 modem, a serial port, a Kensington lock slot (so you can physically lock access to the machine) and a LCD display for system messages.

Because the Qube does not require a lot of space and is easily configured and maintained, it is ideal for a small office. The box itself runs on Linux, and all the settings

can be made either via Web browser or telnet via a client machine. The packaged CD contains all the required software and simple installation instructions, and from pulling the Qube out of the box to sharing file space, an Internet connection, or a printer takes literally less than half an hour.

Although the expandability and upgrade potential of the Qube is slightly limited, it is an excellent solution for the small business with limited requirements of a server. It is extremely easy to install and configure, and takes up virtually no office space whatsoever. Another benefit is that it is comparatively cheap, especially compared to some of the higher-end workgroup servers that can quickly run to tens of thousands of dollars.

One potential problem with it is that you are forced to be responsible for data backups. The drive for the Qube can be backed up across a network, but in a busy work environment this can be overlooked, and the loss of a server's data could be catastrophic.

Contact Sun Microsystems

Phone 1800 628 193

Online www.sun.com.au

Price \$2,900

Verdict ■■■■

NEC Express 5800/120Ee

EXPRESS YOURSELF

Like most Intel-based workgroup servers, situated at the heart of the 5800 is the ServerWorks chipset. Running on a 1.2GHz Pentium III-s processor, 512KB of Level 2 cache helps the server handle multitasking and time slicing better than if it were running on a standard motherboard, and better than the machines with only 256KB of Level 2 cache.

The NEC unit works with a wide range of operating systems, including Linux, Novell NetWare, and Windows NT Server 4.0 (although the model that we received was running with Windows 2000).

Bundled with the Express 5800 is NEC ESMPro, a GUI software management tool for servers that enables you to keep an eye on system security and monitor system functions.

Local polling, alert management and auto discovery are all incorporated within in the software package, helping facilitate network administration, something especially useful in a hectic work environment.

Unfortunately the disks are not hot-pluggable, unlike



the Compaq server. This entails the network administrator powering down the system each time they need to swap hard disks or make key hardware adjustments. While network administrators can afford to be selective in the timing of the more mundane adjustments, downtime caused by urgent replacements or upgrades on a network experiencing heavy demand means that any time the server is out of action, the business is sacrificing productivity and money.

Bottom line: it can be extremely beneficial to have hot-swappable drives and expansion slots. Such functions can be quite expensive, yet it is interesting to note that the Compaq offering costs around 10% more, yet does include hot-swappable drives and expansion ports. That said, unless your server needs to operate 24-hours-per-day, you can usually get by without this added expense.

As a boon, the NEC Express has RAID support, so you can back up your data to two or more disks at once, so if one keels over, you have an exact backup of that disk ready to go.

The Express 5800/120Ee is a good choice for a small business, with the potential to expand as well as being easy to deploy and upgrade.

Contact NEC

Online www.nec.com.au

Phone 13 16 32

Price \$10,200 add \$700 for gigabit ethernet

Verdict ■■■■

A REAL PRO

If you are dependant on your data being accessible all the time, to the point that any network downtime or waiting for backups to be restored will halt your business, then it's imperative that you run a RAID array to ensure that your data is backed up at all times.

One of the best features of the Compaq server is its case design. When the front panel of the machine is opened, you are met with a rack of hot-pluggable SCSI drives that can be configured in a RAID array. If one fails, all you have to do is open the front of the case using your key, grab the front of the drive, pull it out and slide a new one in. There are six slots for drives in the front of the machine, so you can run a wide RAID array to satisfy even the most paranoid of system operators. In addition to removable drives, the ProLiant features hot-swappable PCI expansion slots, so you can add and remove hardware without taking the machine down.

Memory requirements of servers are generally higher than desktop machines because of the amount of jobs that a server must process simultaneously. Extra RAM makes a tremendous difference to performance, so 256MB really is a bare minimum for a modern

PC-based server. Our test model featured a Pentium III-s processor, the ServerWorks chipset and 512MB of RAM. It was also wisely configured with three 9.1GB SCSI drives running in a single array, meaning that our data was doubly backed up. Six slots are included on the face of the machine, along with three 5.25in drive bays for holding DVD-RW or CD-RW drives.

Although the Compaq unit is a mini tower case designed to be small enough to sit in the corner of an office somewhere, when powered up it sounds like a vacuum cleaner. The whirring of fans is extremely distracting, but this is our only complaint with the ProLiant; all told it's an excellent server that will virtually ensure the safety of sensitive data and is expandable alongside your requirements.

Contact Compaq

Online www.compaq.com.au

Phone 13 23 93

Price \$11,645 plus \$510 for a gigabit Ethernet adaptor

Verdict ■■■■



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BY PHILIPPA YELLAND

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IT and technology are a passion for 34-year-old Darren Adams, managing director of Concord Communications. "I'm driven by a desire to be immersed in the latest technology and to have fun."

For Adams, as the IT sector becomes increasingly complex, the role of the MD becomes more diverse. Instead of bunkering down in his office, he believes in being part of the team on the ground. "I lead the sales and marketing engine for the business across the Asia-Pacific region. This gives me the chance to get to grips with what we're doing and helps me to make qualified decisions."

When he joined IBM as an 18-year-old, Adams saw himself as a disadvantaged Sydney "westie" — although he was aiming to become an airline pilot. Big Blue was there just to provide cash for flying lessons. Yet technology sector democracy and the death of old school-tie traditions made an IT future a seductive alternative.

Adams found that intelligence and aptitude counted far more than qualifications. He could flex his intellectual and leadership muscles, assisted by new technology which destroyed conventional management structures.

Since then, his determination and fascination with the industry have been

the driving factors behind his rapid ascent of the corporate ladder.

"Every day was an exciting adventure with new codes, technologies and systems moving at breakneck speed — it was just what I was looking for."

After seven years at IBM, and armed with a 25-year-old's optimism, he decided it was time for a change. Adams was with Uniplex Pacific for two years and then Progress Software for three. This was followed by three years at the PC DOCS Group and a brief Solution 6 stint before joining Concord Communications.

With only an HSC and a diploma from the Hard Knocks University, Adams is convinced

PROJECT MANAGERS ARE LIKE GODS. THEY DO MIRACLES. WOULD YOU ACCEPT A TWO DECADE, \$2 BILLION CHALLENGE TO CLEAN UP SYDNEY'S WATER? YES? THEN PROJECT MANAGEMENT MAY BE FOR YOU.

For a Sydney-based software company — which remains anonymous in order to preserve its competitive advantage — good project management has increased output of its bespoke applications while reducing costs. The company employs 150 people who used to complete 10 applications a year, but these were usually delivered months late.

Now, 18 months later, they complete 12 or more applications per year, are always on time, and costs have dropped by one-fifth. This was achieved by assigning a project manager responsible for the whole development cycle for each customer application. Authority is clearly defined and the project manager pulls in people from specialist groups and negotiates with group leaders for resources.

If it's not quite walking on water, it is a feat comparable with a tightrope walker juggling china plates, singing songs and tap dancing. Ray Abe describes how difficult it is for people to change their thinking and approach to issues. Task-oriented engineers need to embrace all the complex political, economic, social, technical, legal and environmental demands on Sydney Water. "And the relationship with our regulators will continue to create tension," says Eyles.

Ten years ago, one in every 10 to 20 companies had project-based work — now it's a third or more, says Mark Williams, principal consultant for PA Consulting's global transformation group. He describes organisations which are transforming themselves to be completely project-focused so as to respond better to customer demands and cut time-to-market.

A good project manager has a rare blend of hard and soft skills, and there are no undergraduate degrees in it, but the University of Technology Sydney is planning one. Leadership ability is crucial — teams are usually comprised of specialised people who expect to be part of problem solving and decision making.

Teams develop in four stages, according to project management guru Bruce Tuckman: **1. Forming** The project manager delivers terms of reference, expectations and outlines for appropriate behaviour.

there's more to IT than qualifications. "Be passionate about the IT industry. It's only now starting to grow up. From the '70s to the '90s execs hid behind jargon and acronyms because many companies saw IT as a black art.

"Today's IT consumer is savvy. The board wants return on investment, understands jargon and acronyms, and can no longer be bamboozled by IT-speak. IT people today are as much businessmen as technicians — the boundaries have become more fluid."

As a respected, inspiring leader who wants to see staff fill coveted roles,

Adams says, "The greatest gift I can give to any employee is growth, learning and happiness."

Adams' career highpoint was his first million-dollar software client and his lowest point was missing quarterly targets. He dreams of owning a Melbourne Cup winner and his own reef dive shop.

www.concord.com

Darren Adams

0417 247 789

7/53 Walker St

North Sydney

NSW 2060

GET OUT OF JAIL FREE

Have you been accused of using company computers for private email? Or do they allege you were surfing instead of designing spreadsheets?

If this happens to you, don't panic. The increasingly common wireless networks in offices are not secure.

Neighbourhood cordless phones sometimes hook into each others' base-stations, and radio networks rely on similar technology.

Because the wireless network will be behind the firewall and encryption, and privacy standards are weak, the hacker outside masquerades as an employee and gets free Web access or steals commercial secrets.

So, deny vigorously that you did whatever they accuse you of and ask for a lawyer.

Your solicitor will use expert witnesses to demonstrate how simple scanning software on a laptop at a cafe or a PC in another building would have been able to hack into the company LAN.

Bosses reading this should get a security expert to check out wireless components at the office.

BOSS APPRECIATION OR JOB SUICIDE

Construction workers claim they never try to get sacked intentionally. About 5% of IT workers admit to having attempted job suicide (trying to get sacked intentionally) and 11% of government workers have tried to get themselves sacked. Compare this with the fact that 75% of construction workers feel their bosses appreciate them, 65% of IT workers feel appreciated, and only 49% of government workers feel valued.

	Appreciated by bosses	Have tried job suicide
CONSTRUCTION	75%	Nil
IT & COMPUTER	65%	5%
GOVERNMENT	49%	11%

Source: TMP Worldwide; monster.com.au

INDUSTRY PROFILE



THE ACCIDENTAL ACCOUNTANT

Accounting software boomed in the confusion surrounding GST, BAS statements and new rules for business reporting.

Kate McCarten (above), a video rental shop manager, found herself accidentally turning into an accountant as self-employed friends started begging for help with MYOB — Mind Your Own Business, the most widely used of the small accounting packages.

She started a part-time business, McCarten MYOB, in August 2000 and after two months quit the video job. The GST forced owners to implement quarterly financial reporting. Annual shoeboxes of paperwork dropped off at accountants were no longer satisfactory. Bosses had to become MYOB-literate or go under.

McCarten's essential skills were MYOB set-up, training and management. Many clients had never used any system before. She concentrates on needs and goals, training clients to be able to do most things themselves with occasional outside help.

Robert Kiyosaki, author of Rich Dad, Poor Dad, is her hero. "Robert's most important lesson was to become a generalist who understood cashflow. I did well in the HSC but didn't have a career path. At UTS [University of Technology Sydney] after just one lecture I left and went travelling."

2. Storming The validity of the task and the qualifications of individual members are challenged — individuals or sub-groups try to steer the team in the direction they feel most appropriate.

3. Harmonising The project manager must deliver on mission statements, plans for achieving goals, and standards.

4. Performing The manager's focus is on building cohesion.

Leonie Lethbridge, a principal consultant with PA, adds two further stages:

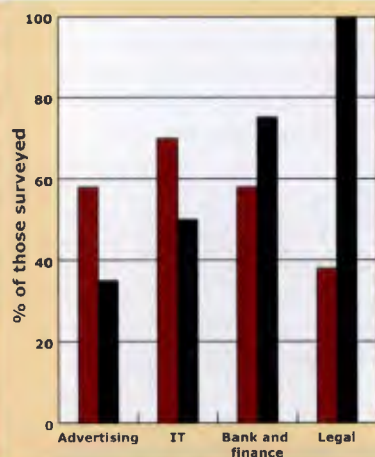
5. Dorming The team becomes complacent due to success, so the manager needs to move the goal posts — promote people to more challenging tasks, rotate tasks, or introduce new members.

6. Mourning The project ends and members lose interest or focus. The manager must ensure all members understand final responsibilities, and also retain key resources so the project can be completed satisfactorily.

Project management is not the place for a "Boys' Club" management style which relies on poor self-esteem, poor communication, arrogance, personal insecurity, no delegation, controlling or secretive behaviour, blame deflection, and manipulation.

Susanne Moore, a project manager herself and principal consultant at Synergy Management Solutions, says: "Key stakeholders — the client and team members — must understand the requirements of the project and be willing to help."

Moore — who's also the former president of the Queensland Project Management Institute — says, outstanding project managers must be flexible, accountable and responsible. "They must have emotional intelligence, be intuitive, grounded in their own values, and able to relate to people at all levels." ■



STOCK OPTIONS vs JOB SATISFACTION

The red column represents the percentage of employees surveyed who said they were satisfied in their jobs. This contrasts with the blue column which represents the percentage of employees whose stock options had either remained steady or increased in value. Notice that having stock options that increased in value, or at least remained static, does not exactly equate to job satisfaction. All those surveyed who work in the legal field had stock options which did not lose value, but their level of job satisfaction was actually the lowest of the four industries. IT workers seem the best off — they're happiest in their jobs and about 50% have stock options which did not decrease in value.

(Source: TNP Worldwide; monster.com.au)

McCarten worked in office management, banking, IT, communications, entertainment, hospitality, marketing and construction. "Name an industry, I have a reference," she says. "I never went back to uni."

Last year, McCarten MYOB expanded to sell Sheriff, an Internet management tool from Tel.net Media. "Salaries are the major fixed cost for any business, so employees surfing instead of working are a significant drain on resources. Sheriff can identify bandwidth misuse."

McCarten's business strategy is simple: word-of-mouth. She does no advertising and no promotion. Clients tell friends and business associates, receiving bonus

credits in exchange. Her whimsical business card reads: "Forensic accounting, dictators overthrown, princesses rescued, ALWAYS available for lunch."

"My charge is \$65 to \$100 an hour and I aim to keep time with clients to a minimum. I show them where they can save money by doing the work themselves. If I receive a call from someone rude or difficult, I say my books are full."

Long hours are taxing, but the work is rewarding. And Kate enjoys battling with big accountancy firms when her clients are overcharged.

Kate_mccarten@iprimus.com.au
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MULTIMEDIA: MAKING IT WORK

WHAT YOU NEED TO KNOW FOR A SUCCESSFUL MULTIMEDIA PRESENTATION.

The word "multimedia" often evokes memories of multimedia presentations which just didn't work. The fifth edition of this book sets out to ensure that any multimedia event will be a success. It seems to be a huge task, but the author's knowledge and enthusiasm guarantee a reasonable measure of success — if the sequence of events outlined in the book is followed.

Author Tay Vaughan follows the layout and sequence established in previous editions. It starts with a brief introduction; then hardware

and software considerations are considered for both Macintosh and Windows. Areas such as text, sound, video, animation, Web, multimedia, project assembly and delivery are all dealt with.

The book benefits from well-placed illustrations and screenshots, an uncluttered page layout and italicised quotes from other authors. A unique way of presenting information is Vaughan's first-person inserts. He uses these insights as an informal way of

enlightening the reader about why a certain sequence or action is being followed. This provides a nice contrast to the instructional approach in the main body.

This title will be useful to both the novice and the experienced developer. If up-to-date information on multimedia, at a reasonable price, is what you're after, then this book is highly recommended.

Publisher Osborne/McGraw-Hill

Price \$89.95

ISBN 0072190957



VISUAL BASIC.NET: DEVELOPER'S HEADSTART

WELL NAMED, PROVIDED YOU HAVE THE CORRECT ASSUMPTIONS. *By David Williams*

This is not a general programming tutorial, nor does it purport to teach Visual Basic.NET programming. This book is aimed at professional software developers who need to get up to speed with just what all this .NET business is, and what Visual Basic.NET can offer them.

Of course, Visual Basic.NET is still (at the time of writing) in beta form. And I am generally fairly wary of the first books to come out on a new technology, because they tend to often give only very superficial coverage.

The author doesn't assume readers have Visual Basic experience, but does write at a level aimed at software developers. Features are often introduced or contrasted to equivalents in C++, Java, Delphi and other languages, so a cursory knowledge of programming concepts and the various differences between these programming languages is needed.

The software professional will gain a sound understanding of Microsoft's .NET strategy and Visual Basic.NET.

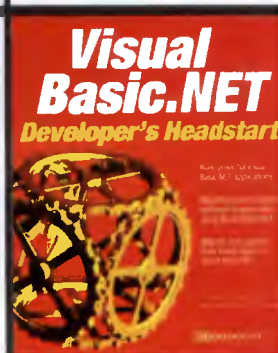
The author is not a bigot about his choice of programming language, and tries to emphasise the appropriate language for a given project.

This said, however, I'm not sure how much longevity this book will have. I guess this is where the "headstart" part of the title comes in, giving programmers the key to just what VB.NET offers so they can be productive from day one — and this I believe it imparts well.

Publisher Osborne/McGraw-Hill

Price US\$17.49 (AUD\$33.80)

ISBN 0072195819



WINDOWS XP: INSIDE OUT

AIMED AT POWER USERS THIS GUIDES YOU THROUGH WINDOWS XP. *By Mike MacCana*

This is an in-depth yet friendly guide to Microsoft's latest desktop OS. However, despite the informal appearance, its 1,100 pages of technical material are best suited to those interested in rolling out and supporting XP in large volumes, principally corporate desktop support staff (particularly those upgrading from NT4 and 9x) and OEMs, as well as more dedicated Windows power users. The accompanying CD-ROM contains a few useful scripts and

unattended install files, an ebook version of the title, and some trial applications and utilities.

Anyone looking for a good XP technical reference should compare this title to the official Windows XP Resource Kit Documentation and a number of independent XP books on the market. They'll find that the Resource Kit is technically more challenging, but it does cover many important topics *Inside Out* doesn't. They'll also find that the

third-party books contain some valuable independent advice — *Inside Out* toes the official line and glosses over some topics. However, the title is surprisingly accessible for a technical book and because of this it would be best suited to new desktop support staff or those working in smaller environments.

Publisher Microsoft Press

Price \$120

ISBN 0735613826



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FREEDOM

BIG, BLACK, BULKY AND BORING — THE DRAB NOTEBOOK BAG IS ON ITS WAY OUT. TRANSPORT FOR THE DIGITAL GENERATION CAN BE CLASSIC, CASUAL OR COOL, BUT WILL THE NEW STYLES KEEP YOUR DIGITAL LIFE SAFE AND SECURE?

Getaway story producer Tina Diaz has just touched down from a diving expedition near Portsea and is about to head to Port Stephens for another hard working holiday. Her well-travelled Acer makes the journey in the basic black soft-sided case it came with. "It's an extra bag and it's easy to lose, but we still sometimes need it for scriptwriting so we can quickly file the story," she says.

Freelance travel writer and photographer Mike Gebicki refuses to carry a standard notebook bag on assignment for *Australian Gourmet Traveller* or Qantas. "Carrying a notebook bag is like saying: rob me!" His Sony Vaio went on a 10-day photoshoot through Jaipur, Delhi and Shimla tucked in a special compartment of his Lowepro (combo camera/notebook pouches for the professional digital photographer). "Keep it as part of your hand luggage in a bag with enough room for your passport, wallet, sleeping pills and some in-flight reading."

The basic \$70 black notebook case has been the only choice for notebook transport. It may come with different configurations — a roll-out suit bag in the Travelon Three in One to a moveable filing cabinet in the Atlantic Virtual Office — but it's still just black and boring and fit for business only. Step out of the office and you won't get very far. Until now.



HOW TO KEEP IT TOGETHER IN THE DIGITAL WORLD, AND DO IT WITH STYLE.

BY SIONA MOSE



FRESH AND FUNKY

Now the digital generation is making its mark on the notebook accessory essential. "The basic type of bag is a decreasing market, your growth is backpacks and wheelables," says Phil Cordukes, manager of Luggageland. He's been selling bags longer than IBM have been making PCs and welcomes the fresh looks now flooding his store. It began just before Christmas 1999 when local unknown STM convinced Cordukes and

other retailers to pit their fashion-friendly notebook accessories against the basic black cases.

"This is luggage for the global digerati," says STM designer Adina Krausz. "Our style is nice and clean and on the edge of corporate without actually being corporate. A lot of people originally said they wouldn't carry a backpack with a suit, but we've pushed that idea out the window." Briefcase-weary consultants from PricewaterhouseCoopers and Ernst & Young now sport STM backpacks.



Mike Gebicki

Soon after, names like JanSport, Fila and Crumpler made a grab for the digital crowd. Now about half the notebook bags Cordukes sell are smart casual, the rest classic black.

CLASSIC AND CLASSY

The problem is that everyone just expects a standard bag when they buy a new notebook. When researching accessories for notebook retailer Laptop Land, marketing consultant Georgia Lane discovered the biggest seller is still the basic black case made by Targus. "If a bag isn't given away with the notebook (such as Compaq currently does with its Presarios), then we attach them to close the deal. Usually, it's the entry-level Targus model or something similar." Lane says people trust the well-established brand to protect their notebook. Targus makes 60% of all notebook bags sold.

But Lane's noticed that about two in 10 notebook buyers at Laptop Land knock back the basic black, especially after they see the STMs. "People actually put in orders for these. We take out the carry bag and provide a discount on the STM."

A travel accessory to match your digital lifestyle should be part of the configuration option on any new notebook. When APC reviewed the latest crop of slimline notebooks (see APC October 2001, page 48), only Dell included a (re-branded drab black soft-sided) bag. But in the race to be cool, have we sacrificed safety for style?

SUBSTANCE AND STYLE

Targus Australia managing director Alenka Tindale is taking the fashion challenge with caution. "Our basic (sub-\$100) model

COOL AND CRAZY

The Crumpler name is sacred among Melbourne's urban cool. Stuart Crumpler — one-time bike courier and master bag designer — sits on a big couch in his Ballarat factory with a fridge full of Mountain Goat ale prototyping new bags. His design secret? "I try not to take much notice of what other people do. It's easier to come up with something different if you do."

Two years as a full-time big-city bike courier showed him the spiritual path to the perfect bag. "When I started, you couldn't get anything in the way of messenger bags so I just cooked one up myself." The only design that didn't fall apart was a one-piece sling pack. "The first bags were dead simple. Easy to put together, stitch up and totally different to anything out there." His courier mates saw how it worked and asked him to make them some, too.

While those first traffic-turning Crumplers worked the Melbourne pavement, back at courier HQ, business owners Dave Roper and Will Miller were busy fielding the question: "Where can I get that cool bag?" In 1997, they sold out of the courier business (for a profit) and went into bags.

Nowadays, 'Guru Stu' works hard to keep the cool in Crumpler, while Dave and Will stitch up global distribution deals and clamp down on cheap rip-offs of Stu's work. He adapted his legendary one-piece courier bag for notebooks in late 2000. "The gadget bags are the same idea as the courier bags: just keep it simple, practical and make sure it looks good."



Dave Roper and Stu Crumpler

If you can do it, you can share it.

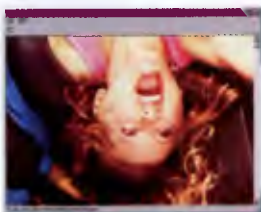
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is sleek, light and compact. It's the essential — you can't improve on that basic functionality and price-point. We've seen a lot of people come in and out of this industry, and it's quality that stays." And their undying commitment to black? "We've tried different colours but people like the black. It goes with everything."

She says the biggest change is really in the technology. Her IBM "luggable" almost ripped her arm off travelling interstate

in 1989. Now with about 35 styles at any one time in Targus' range, there's a bag for any scenario. With so many styles, it's easy to mismatch your bag and your lifestyle.

DIGITAL AND DANGEROUS

The fad for wheelable notebook bags has already proved fatal for some notebooks. Technical services manager for Toshiba Australia, Graham Tierney, issued a warning after some notebooks were returned with loose screws.



▶ Alenka Tindale

"We sat down and analysed what was happening." He discovered the broken notebooks all came from a particular school where the students dragged their notebooks along a tarred road in wheeled notebook cases. "The constant vibration from the trolley had started to affect the notebook over an eight to 10-month period." Toshiba agreed to fix the notebooks, but Tierney warned the students that such brutality wasn't covered by warranty. "I think a backpack or a carry bag is far better than a trolley."

That's why Targus has never offered wheelables in their education programs (especially after Tindale witnessed a busload of schoolboys bump their wheelables down the stairs and proceed to use them as street furniture). "Children are, shall we say, free-wheeling in the way they carry bags, so we discourage them using wheelables," Tindale says. But with air-cushioning and "responsible adult usage", she says they're still a valid notebook bag.

Your mode of digital transport has to match your lifestyle. A good bag isn't the one with the fattest padding — it's the one that lets you have your notebook when you need it without worrying about security and protection. APC sifted through the pretenders and picked eight notebook bags that will take you wherever you want to go. There's one to suit every digital lifestyle. Find out where you fit in.

THE FITTING ROOM

We packed two issues of APC, three jewel-case CD-Rs, a Palm and a 15in Toshiba Satellite Pro 6000 (in the JanSport, Crumpler, Victorinox Trek Pack, Targus Sportline and Kensington) or a 12.1in iBook (in the Fila, STM, Victorinox WebPak) and hit the road.

FASHION AND FUNCTION

You can tell the global digerati by the way they wear technology — with style. But the Standard Technical Merchandise name (aka STM: "Luggage for the Global Digerati") wasn't always so cool. The first STM was a piece of bubble wrap tucked inside the backpack of network administrator Ethan Nyholm. He was working for a teen fashion chainstore at the time, so he asked accessory manager Adina Krausz for help.

"We sat down and scribbled out a few ideas," she says. "We looked at what was happening in fashion: the latest fabrics and looks and the styles that would stay around. We had to be fashion forward, but classic as well." They pinned together what they thought was the perfect vehicle for the digital generation to carry their life in. "When we got the prototype back from the factory it was nothing like what we thought." Six months and eight makeovers later, two bags hit stores for Christmas 1999. From a home-office in Bondi, they made tweaks to the expanding range and built up trust with PC makers and retailers (backed up with crash tests at the University of NSW).

Late last year, they staked it all on a concept design. Built from the ground up, the Parachute range is a new look for a new generation. "We are our target market and we know what we want. For us it's as much about fashion as it is about function." The future? "We're hoping to encompass the whole digital lifestyle." She'll go wherever the digital revolution takes her.



▶ Ethan Nyholm and Adina Krausz

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CAREFREE AND CASUAL: TARGUS SPORTLINE BACKPACK

The Targus Sportline Backpack is the classic casual backpack with a notebook twist. A mesh-lined layer of unshaped foam rests against your back and broad padded shoulder straps distribute the weight for a comfy ride through your daily commute. The notebook straps into an extra compartment, but there's no flap to protect the zip, so rain can seep through the sides.

Be careful swinging the pack to the ground — the vinyl-look reptile-patterned base provides only adequate "put-down" protection.

Contact Targus
Phone 1800 641 645
Online www.targus.com.au
Price \$109,95
Verdict ■■■



ANYWHERE, ANY TIME: JANSPORT LAP STATION

The JanSport Lap Station carries your life on your back and transforms into a mobile docking station. Flip open the back and rest the makeshift desk on your lap with your discs and notes arranged in neat pockets at your fingertips. A second top-loading compartment and a small crush-proof outer pocket (with headphone slot) keep the rest of your life in order. At about 2kg (that's almost half a kilo heavier than other backpacks), it might be a burden if

it weren't for the patented gel-like rubber Airlift shoulder straps. The squishy mesh-lined S-curved pads absorb shock and balance the load so comfortably, it could take your notebook to the top of Kosciuszko and back.

Contact JanSport
Phone (03) 9820 5588
Online www.jansport.com
Price \$259,95
Verdict ■■■



ON PARADE: FILA SPORT AND CITY

The Fila Sport and City Computer bag is this season's must-have notebook accessory for fashion aficionados. The sporty facade hides a rigid lightweight moulded back and base, while the outer flap covers two small front pockets and a narrow zip-up fan file. Peek inside the protective shell and there's only a flimsy pocket with an ill-fitting velcro strap. The soft material

stains and scuffs easily (the black rain cover helps a little), and the thin polyester lining won't last long either. A fashion essential if you like a new look every year.

Contact Luggageland
Phone (02) 9299 6699
Online www.luggageland.com.au
Price \$110
Verdict ■■■



THE BAG CHALLENGE: WHO LIKES WHAT AND WHY

Public relations account executive Alex Hill:

"I like the Targus because it's small, light and easy to carry around. The strap is really comfortable and the stiff casing is really sturdy. It looks nice too!"

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► Targus Trademark Notepac



► STM Parachute

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Close a switch and run a Macro-USB Interface. Store multiple keystrokes or complex commands and send them to your computer by simply closing a switch. There are 12 switch inputs which can share over 900 keystrokes. The inputs consist of 3.5mm mono phono sockets. Software supports Win 98/ME and Mac OS 8.5+. **Cat 8936-1 \$319**



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Cat 11328-1 \$354



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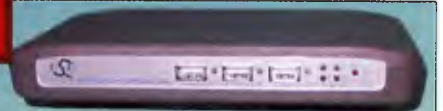
This Colour TCP/IP terminal is the replacement of choice for critical applications. Providing support for a broad range of popular operating environments and most WYSE emulations. If you need your network replacements up and running quickly, and reliably, these terminals are the answer, especially in harsh environments.

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SHOREAD/MGRM0402

PERFECT LANDING: STM PARACHUTE RANGE

STM's Parachute range is designed to combine your life and your notebook without compromising either. The Ultra is the small backpack in the family, with a liftout padded notebook wallet (upgrade to the full size backpack or the shoulder-style Messenger for larger notebooks and keep your MP3 player in a matching pouch). STM's signature oversized security flap makes it impossible to remove the notebook without unclipping the side buckles, but slip your hand underneath and keep your essentials in the small hidden pocket. The smooth lightweight fabric (an original STM weave) retains its shape and shine

while the mesh-lined straps, moulded back and tuck-away waistband balance the weight comfortably. If your notebook is as much a part of your day as your mobile, then STM gives you the freedom to have it whenever you need it.

Contact STM
Phone 0403 183 203
Online www.standardtm.com.au
Price \$121
Verdict ■■■■■



SWISS ARMY BAG: VICTORINOX WEBPAK

There's enough go-go gadgets in the Victorinox to send a secret service agent on a mission impossible. Arrange your handheld, keys, papers, drink bottle, pens, business cards and Swiss Army knife in special pockets, while keeping your notebook in a lift-out sleeve lined with a strong elastic suspension system. The detachable S-curved carry strap (love the special clips for left-

handers) absorbs shock as you walk, but the unbalanced back-breaking detachable backpack straps take this gizmo bag one step too far.

Contact Sheldon & Hammond
Phone 1800 6808 971
Online www.swissarmy.com
Price \$465
Verdict ■■■■



STREET CRED: CRUMPLER WHACK-O-PHONE

The Crumpler Whack-O-Phone is a master revision of the classic Australian-designed courier bag. The true courier is a curious mix of shoulder bag and backpack. A single chest-hugging industrial-strength belt secures the bag diagonally across your shoulder blades. Position and balance come from "the third leg" — a quick-release buckle under your armpit. This keeps your hands free like a backpack but to open the bag, there's no need to take it off, just unclip the third leg and swing it around. The Whack-O-Phone "The bag for hanging your crack out" (designer Stuart Crumpler says,

"my brother told me it's a word for mooning") protects your notebook in a pocket built into the padded back and base. Enormous outer pockets collapse inwards when empty (pick the Roll-O-Notes for something smaller) and let you do everything a courier can — with a notebook.

Contact Crumpler
Phone (03) 5336 4440
Online www.crumpler.com.au
Price \$220
Verdict ■■■■



► Crumpler Very Busy Man

Telecommunications engineer Tim Cowan: "I love the Crumpler style — it's unbreakable. There's heaps of space for business stuff and the shoulder strap with the little extra clip spreads the weight a lot better. Altogether pretty good for a geek bag."



OCCASIONAL CARRIER: KENSINGTON SIMPLY PORTABLE ROLLER

The Kensington Simply Portable Roller is an extra travel case for when your everyday notebook bag isn't big enough. Wheelable hand luggage might be the vehicle of choice for interstate flyers and train commuters, but the constant vibrations could kill your notebook. The Kensington lacks everyday durability but is handy for occasional trips or business presentation roadshows. The top-loading design unzips three main pockets while a squishy

bubble foam insulates your notebook from some of the rumble of the in-line skates. The smooth handling three-level spine is a relief from any attempt to use knee-knocking detachable shoulder strap.

Contact Acco Australia

Phone (02) 9695 2505

Online www.accoaustr.com.au

Price \$199,95

Verdict ■■

INTREPID TREKKER: VICTORINOX TREK PACK TRAVELLER

The Victorinox Trek Pack Traveller (20in) boldly goes where no other notebook bag has gone before — on wheels, on your back and in your hand. Grab the swivel handle and the spring-loaded retractable pole maneuvers smoothly through traffic, then curves back into the pack behind fold-away hiking grade straps. The main pocket holds a lift-out notebook pouch (with elastic shock absorption) and a series of mesh pouches. The second pocket opens a fan file, the next arranges pens, cards,

keys and handheld, and the outer pocket holds the instruction manual. It's called the E-Motion 360-degree Response system and it's a pity all this amazing luggage technology doesn't leave much space for your stuff.

Contact Sheldon & Hammond

Phone 1800 6808 971

Online www.swissarmy.com

Price \$659

Verdict ■



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RUSH HOUR 2

WHAT, A JACKIE CHAN FILM PACKED WITH ACTION? WHO WOULD HAVE THOUGHT? *By Matt Overington*

The cultural and physical differences between LAPD detective Carter (Chris Tucker) and Hong Kong detective Lee (Jackie Chan) are played up to produce the humorous, albeit predictable, film *Rush Hour 2*. As the director Brett Ratner said in an interview, this movie is largely a time-honoured American "cop buddy" film in the same vein as the *Lethal Weapon* series.

Anything Jackie Chan touches is packed with intense action and fast-paced martial-arts sequences, and although the fight scenes are relatively short (allegedly to cater to an international audience) *Rush Hour 2* doesn't disappoint. Along with Chan, Hong Kong superstar Zhang Ziyi (from *Crouching Tiger Hidden Dragon*) plays a large role, and her fight sequences are jaw-dropping.

VIDEO

The footage is presented in 2.35:1 anamorphic widescreen format, and although some very minor artefacts and graininess are present in the mastered footage, this is often a problem in DVD action films containing lots of fast movement. The lighting and visual effects are mediocre for a modern movie, with the night chase scenes filmed in Hong Kong being a touch too dark.

AUDIO

While the video is good, the audio is outstanding. New Line Cinema has opted to use 6.1 Discrete DTS and 5.1 Dolby surround, and the sound is one



▶ *I hope the wind doesn't change*

of the best reasons to watch *Rush Hour 2* on DVD instead of on video. Action movies, of course, rely heavily on sound, and the audio during the fight sequences gives a sense of depth; thanks largely to the *Matrix*-esque surround-sound effects. Bullets and flying bad guys whistle past your ear during some of the more frantic fight scenes, especially at the climax of the movie, which is filmed in a crowded casino.

EXTRAS

The disc is packed to the seams with extra features, although most of them are various members of cast and crew talking about how talented Jackie Chan is. A passing mention is made regarding the issues involved with filming a big-budget American blockbuster in Hong Kong. The extras are mainly of interest to fans of Jackie, and you immediately get a sense of just how revered he is in Hong Kong (not to mention by Chris Tucker and director Brett Ratner). The first few 'making of'-type clips play up his involvement in the production of the movie and at one stage he's even given the dubious title of "the biggest movie star in the world". ■

Price \$39.95



BLACKADDER GOES FORTH

Set during WWI, the fourth and final series has Captain Blackadder, Lt George and Private Baldrick sharing a trench and taking orders from General Melchett. Although there are no extra features on the disc, all six episodes of the final series are included. Fans will love it.

Price \$34.95



SPACE

For anyone who missed the original television broadcasts, the *Space* BBC-TV documentary series, presented by Sam Neill, is now available on DVD. The footage runs almost three hours, plus there's a photo gallery, space encyclopaedia and 'behind the scenes' footage.

Price \$34.95



JAZZ: A DOCUMENTARY BY KEN BURNS

Taking six years to produce, *Jazz* profiles the life and history of jazz from the gritty streets of the US to mainstream success. The four DVDs in the set are packed with 10 hours of archived clips, images, music and interviews showcasing jazz as America's one true art.

Price \$109.95

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A.I. ARTIFICIAL INTELLIGENCE

CAN GREAT SOUND AND STUNNING EFFECTS EVER SAVE A FILM

THAT'S OTHERWISE HEADED FOR DULLSVILLE? *By Matt Overington*



A.I. is depiction of a future where — post global catastrophe — robots have been smoothly integrated into society to make the lives of humans more bearable.

Unfortunately, this has reduced the menial jobs for humans and implies

a class struggle between rich and poor, robot and human. People require rare and valuable licences in order to have children; to one family with a comatose son comes the experimental 'mecha' boy, David (played by Haley Joel Osment), the first robot created with the capacity for love.

Because of the role that the mechas have in the society, each one is registered and marked with a code. Those devoid of numbers are rounded up and destroyed for the entertainment of humans at barbaric circus displays. *A.I.* deals with the relationships between David and other robots and humans, and forces us to examine the values that we ascribe to our 'humanity'.

VIDEO

The movie itself is presented in 1.85:1 widescreen format and the conversion to DVD has been extremely well mastered, with virtually no artefacts left over during compression. The movie's future setting and dark footage indicate

the adoption of a Gothic-noir technique for large parts of the film.

The computer-generated scenes are visually stunning — one scene filmed in a robot junkyard which features maimed and damaged robots searching through a scrap heap for limbs is a particular stand-out.

AUDIO

The audio production matches the high level achieved by the visuals, and the soundtrack is particularly moody and atmospheric. It's provided in English and French in both Dolby Digital and DTS surround sound formats, and subtitles in French and Spanish are also available.

EXTRAS

One of the best reasons to buy *A.I.* on DVD is the extras. A second disc is included along with the feature disc that is devoted entirely to housing *A.I.*'s making-of and behind-the-scenes videos. Watching the interviews and extra features, you are unable to shake the impression that *A.I.* is an concept that has been riven by the differing visions of its two producers (it was originally conceived by the late Stanley Kubrick and is directed by Steven Spielberg). Unfortunately, the movie itself fails to live up to expectations: while being detailed and rich, for the most part *A.I.* is dull and tedious. ■

Price \$39.95



PC

MEDAL OF HONOR: ALLIED ASSAULT

ONE OF THE PLAYSTATION'S
FINEST GAMES HAS FINALLY
MADE ITS WAY TO THE PC,
BUT CAN IT LIVE UP TO ITS
PREDECESSOR?

By Daniel Gardiner

Return to Castle Wolfenstein might have been last Christmas' hottest first-person shooter, but 2002 has delivered an even brighter gem: EA's Allied Assault. Both these titles share the same fundamentals — they're shooters set in WWII, they use the Quake 3 gaming engine and you play as an Allied operative. But that's where the similarities cease.

While Return to Castle Wolfenstein is a fun sci-fi romp, the developers of Allied Assault have taken a more realistic route. There are no female Nazis in tight black leather, just German soldiers — and truckloads of them.

The action takes place initially in Africa and then in Europe. Gameplay is nicely varied, although there's little innovation over previous FPSes. A range of environments (such as a Luftwaffe airstrip in an African desert, and even the inside of a German U-boat) call for different strategies and weapons. It's challenging and fun to stalk through a bombed-out city, trying to pick off well-hidden snipers.

Sound effects are stunningly real, and are similar to those heard in *Saving Private Ryan*. The score

is also first rate, and often uses the same tunes as the PlayStation original.

Allied Assault has often been called a "cinematic experience", but it's more like a set of clips of tense WWII action scenes than a whole film. The focus is objective-based gameplay in a series of well-paced missions with specific goals (such as blowing up German artillery or escorting a tank crew).

The missions are entertaining but perhaps a little too tightly scripted. Despite this, the PC version of Medal of Honor manages to raise the bar for FPSes an inch or two. Even if you've already played Return to Castle Wolfenstein, Allied Assault is a fresh and entertaining experience. ■

Online mohaa.ea.com

Price \$99.95 [FULL REVIEW ONLINE >](#)



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COMANCHE 4

In this fourth instalment of the excellent series of helicopter action games, you return to the cockpit of the US Army's RAH-66 Comanche. You take to the air to fight it out in urban, desert and jungle-based missions.

Online www.novalogic.com

Price \$89.95



BLACK & WHITE: CREATURE ISLE

Peter Molyneux's complex god game gets a fresh new spin with this expansion pack. You must venture into a land without gods, ruled by Creatures. Your Creature's abilities will be tested and you must also overcome a series of new trials in the Creature Isle.

Online www.bwgame.com

Price \$39.95



EUROPA UNIVERSALIS 2

The sequel to last year's medieval hit fuses deep strategy with RTS elements to make this one addictive and intelligent game. Strategy fans are going to be thrilled.

Online www.strategyfirst.com

Price \$99.95



ICO

PS2

IT'S A BRAVE GAME THAT SHUNS HYPE AND BIG BUDGETS IN FAVOUR OF GOOD TASTE AND ORIGINALITY — THAT'S THE FANTASY ADVENTURE ICO.

By Kevin Cheung

Like a childhood fable brought to life, Ico is set in a fantasy world of natural wonders: magnificent forests, gurgling rivers, creaky wooden bridges and medieval-style villages. This is the kind of world where the simple struggles between good and evil are believable and all the more pronounced.

Ico (pronounced "Ee-koh") is a young boy forced into exile by fear and superstition. The horns on his head were deemed a sign of evil tidings, and so he was bound and

cast into a lonely, bewitched castle. It is not long before Ico chances upon another person, a young girl whom he neither knows nor can understand. After she is attacked by shadowy creatures, Ico takes it upon himself to free the lass and get her out of the castle.

It's apt that "Ico" is the phonetic equivalent of the Japanese phrase "let's go", as the game brings new meaning to the time-honoured charge of saving a beautiful princess. She is utterly helpless, fair and innocent, and Ico must physically take her by the hand and lead her through the perils of this enchanted maze. They speak completely different languages, but through simple button presses Ico can prompt the girl to "come over here", "take my hand", and so on.

Ico isn't blessed with great fighting skills, and armed only with a large

stick and the ability to head butt with his horns, he feebly stumbles against the weight of his weapon.

The atmosphere is wondrous and magical. Viewed from fixed third-person perspectives, exploration involves brain-teasing puzzles that stretch the limits of one's wits. In one instance, Ico must hang on to the arm of a windmill to reach the top of a building.

Animation is also of vital importance to this game. Ico's smooth and realistic animations are as much a key to the gameplay as they are to the game's personality and charm. There are flashier and more hyped games than this on the PlayStation2, but none come close to the originality and classiness of this work of art. ■

Online www.scee.com
Price \$99.95



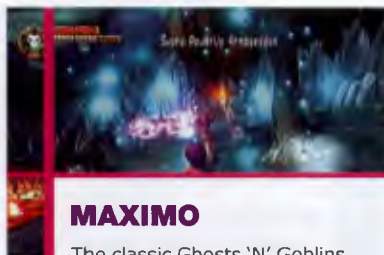
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SPACE CHANNEL 5

Dance and groove away in this "Simon Says" music game starring Ulala, an intrepid space reporter who's a cross between Lois Lane and Barbarella. It's an unbeatable crowd-pleaser.

Online www.u-ga.com
Price \$99.95



MAXIMO

The classic Ghosts 'N' Goblins series is reborn in this zombie-filled action game. Visuals and music are faithful to the original, with sword-slashing gameplay translating perfectly into 3D. Even the hero's armour can be smashed off, leaving him in just his boxer shorts.

Online www.capcom.com
Price \$99.95



PARAPPA THE RAPPER 2

Not much better, but a fine form return for Sony's rapping canine. This sequel's set of cartoon cut out-like music videos are more diverse than before, lending better value.

Online www.scee.com
Price \$99.95



GET IN CONTROL

FOUR NEW CONSOLE GAMING GADGETS FOR THE XBOX FROM THRUSTMASTER. *By Kevin Cheung*

FIRESTORM PROGRAMMABLE GAMEPAD

This gamepad has instant appeal over Microsoft's standard pad — there's no useless plastic bubble in the centre. This frees up space for a more comfortably placed digital thumbpad. But the desire for symmetry means the right analog thumb stick has been pulled further out to the centre of the pad, and is not as easy to control.

Its front-face buttons are slightly smaller than

Microsoft's pad, so you're less likely to mash them when using your thumb. But the spacing between buttons is the same, so your fingers will still be jammed together while playing fighting games.

Curiously, the Firestorm gamepad has only one memory card slot — Microsoft's has two. There aren't any games that use two slots yet, but it may be a problem with future titles.



Phone (02) 8303 1800

Online au.thrustmaster.com

Price \$59.95

Verdict ■■■



Phone (02) 8303 1800

Online au.thrustmaster.com

Price \$149

Verdict ■■■■

360 MODENA RACING WHEEL

In a welcome first for console gaming, the 360 Modena has leg rests. Of course, it comes with the standard table clamps, but they can be replaced with a simple slab of plastic moulded to fit your legs. Then the wheel can be propped on your lap while you lounge in front of the TV.

It also has two digital gearshift levers behind the wheel to emulate the genuine Ferrari

experience. There's an additional pair of analog levers directly beneath them, which can be used as an alternate means of breaking and acceleration to the foot pedals. Wheel movement is tight, but transitions between left and right turns are smooth. It also has sensitivity adjustment options on the front panel and built-in vibration.



TOP GUN FOX 2 PRO FLIGHT STICK

Right now this flight stick isn't suitable for any game — except Konami's surprisingly lousy Airforce Delta Storm — but it's easily the best-looking peripheral available for the Xbox. The flight stick has an eight-way hat switch, a twistable handle, three primary firing buttons, a throttle slide, and buttons on the base module for toggling weapons, targeting and points of view.

Players choose between different control-interface presets at the press of a button, and the stick also has programmable buttons, axes and vibration feedback settings. As it's an officially licensed product, it's disappointing Thrustmaster hasn't done anything to sweeten the deal. It would've benefited from an analog mini-stick, or even a flip-top cap for important enemy kills.

Phone (02) 8303 1800

Online au.thrustmaster.com

Price \$99.95

Verdict ■■■■



Phone (02) 8303 1800

Online au.thrustmaster.com

Price \$189.95

Verdict ■■

FREESTYLER BOARD

The Freestyler Board is a novel device that can help broaden the appreciation of the average boarding game, but it comes at some cost to precise control. Supporting up to 120kg, the board will tilt left and right to control on-screen movements, with additional functions performed by the buttons, triggers and the right analog stick, all stacked on an accompanying one-handed control device. They've even made room for the

L-trigger on the back side of this hand module. The board however is rewarding only on games viewed from directly behind the main character.

Success requires steady nerves, solid ankles and calves of steel. Anything more advanced than simply carving up the landscape can be too complicated. Dextrous movements, such as those required in Tony Hawk, are impossible. Nevertheless, this is quite a satisfying ride.

THE INVISIBLE FUTURE: THE SEAMLESS INTEGRATION OF TECHNOLOGY INTO EVERYDAY LIFE

A STELLAR CAST STARRING SOME OF THE WORLD'S DEEPEST THINKERS
MAKES FOR THOUGHT-PROVOKING READING. *By Darren Horrigan*

If the names Vint Cerf, John Seely Brown, Bob Metcalfe and Michael Dertouzos mean little to you, don't worry. They're only scientists, inventors, futurists and researchers. However, if the theories they espouse in *The Invisible Future* also leave you cold then you obviously have little interest in how technology is shaping our world today and beyond.

Even if you don't care how this tech thing is playing out, shouldn't you be curious about whether or not the future is a place worth being? As a collection of essays from 18 luminaries

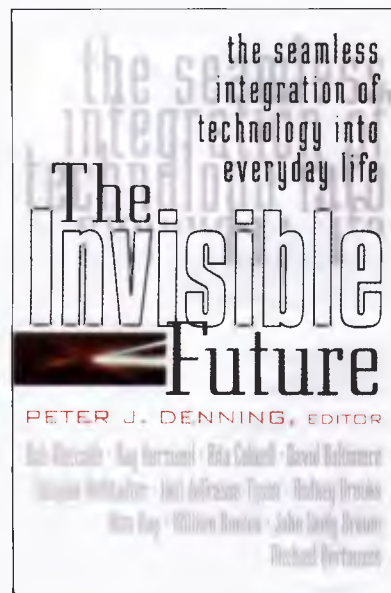
in their fields this book allows you to dip in and out of the orbits of its contributors, among whom you'll find a Nobel Laureate, a Pulitzer-prize-winning author, two directors of MIT, the former chief scientist and director of the Palo Alto Research Centre, the inventor of the Ethernet, and the man known as "the father of the Internet".

Based on papers delivered at a conference organised last year by the Association for Computing Machinery, a New York-based thinktank founded in 1947, the stars of this eclectic show are not all geeks. Somehow, an oceanographer, an astrophysicist and a science-fiction writer get to play roles. As does the celebrated psychologist, Richard Strozzi Heckler, whose chapter finishes with the idea: "Together, let us reinvent our schools and universities so the wisdom of the heart and spirit, instead of machines, guide our children." These people are deep thinkers.

It must have been difficult to bring together so seamlessly such divergent opinions, so bravo to editor Peter Denning. He has played conductor to an ensemble of players practical enough to recognise the human aspects of the technological revolution of which we're all a part.

On the whole, it is well written.

Edited by Peter J. Denning
Publisher McGraw-Hill
Price \$49.95
ISBN 0071382240

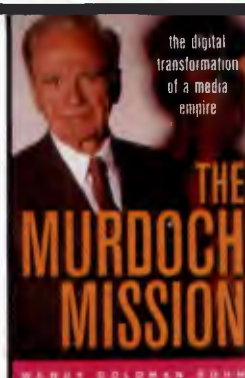


Forgive the occasional stodginess for access to such beautiful minds.

THE MURDOCH MISSION:
THE DIGITAL TRANSFORMATION
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This is the inside story of how Rupert Murdoch is transforming his media empire for the digital age. Goldman Rohm provides a blend of business, strategy and an illuminating insight into the personalities of the Murdoch family, including James and Lachlan. It's an utterly readable book.

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Price \$49.95 (hardcover)
ISBN 0471383600



**BLONDIE24: PLAYING AT THE
EDGE OF AI**

Author David Fogel describes how he and his colleagues built a different kind of AI with infinitely more flexibility: an 'evolutionary' checkers-game-playing program that learned how to improve its abilities through observation. It's engaging reading for anyone even remotely interested in AI.

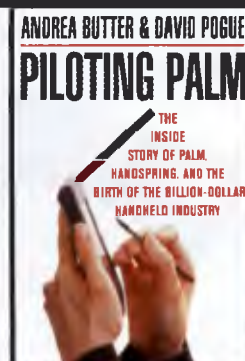
Publisher Morgan Kaufmann
Price \$72.60
ISBN 1558607838



PILOTING PALM

Almost soap-operatic in its ups-and-downs, it sweeps from Jeff Hawkins's early work with portable-PC-maker GRiD to the spin-off of Handspring, and all in between. A shame, then, that the documentary style still leaves the reader feeling like an outsider looking in.

Publisher John Wiley & Sons
Price \$49.95 (hardcover)
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NVIDIA GEFORCE4

THE LATEST INCARNATION OF NVIDIA'S AWESOME GRAPHICS CARD CHIP IS HERE — THE GEFORCE4. BUT DO THE LATEST IMPROVEMENTS LIVE UP TO THE NVIDIA PROMISE?

You must have been living under a rock for the last two years if you haven't heard of nVidia. Ever since the release of the GeForce range of graphics cards in 1998, nVidia has dominated the market, all but crushing its competitors on the way. As it stands now, nVidia is producing chips for PCs, Macs, notebooks, and Microsoft's gaming console, the Xbox. It has been a year since the release of the GeForce3, which revolutionised the video-card market at the time. Now, with the debut of the GeForce4 Ti, nVidia looks set to do it again.

NEW TECHNOLOGY AND FEATURES: NFINITEFX II ENGINE

One of the groundbreaking enhancements in the GeForce3 was

the inclusion of what was dubbed the nFiniteFX Engine — the world's first programmable 3D graphics chip architecture. By using 3D textures, along with the vertex and pixel shading capabilities of the nFiniteFX Engine, developers were able to produce near photo-realistic images. Three-dimensional textures are used to make hollow objects appear solid by mapping the surfaces with what appears to be a textured surface — like wood grain or a coarse finish of sandpaper, while vertex and pixel shaders are used to carry an effect over time, such as the appearance of wrinkles around eyes when a face smiles by either manipulating vertices or light sources. The nFiniteFX II Engine takes the basic functions of the nFiniteFX Engine and expands on them, adding a second vertex shader and a more advanced pixel shader. The result is that the GeForce4 Ti is able to render more complex scenes in realtime, approaching the performance levels of professional graphics workstations. nVidia has produced some demos which showcase the performance of the nFiniteFX II Engine that you'll find on this month's APC cover CD. The Wolfman demo features a horde of demanding tests and effects, including

► *New lighting and texture effects enable the GeForce4 to render stunning monsters.*

rendering eight blended layers of fur, 97,000 polygons per frame, pixel and vertex shading, and is rendered in realtime. Only the GeForce4 Ti features the nFiniteFX II Engine, however, the GeForce4 MX instead features a Video Processing Engine that is able to output improved DVD playback. The MX range is aimed directly towards consumers, while the Ti range is really for the hardcore enthusiasts.

ACCUVIEW ANTIALIASING

Another breakthrough with the release of the GeForce3 was High Resolution Antialiasing (HRAA). Antialiasing smooths out the jagged lines that appear around straight edges drawn across a grid, by performing interpolation and shading the pixels that fall around the line. The GeForce4 features Accuview Antialiasing (AA), which is a further expansion on HRAA that offsets where the pixels are sampled from for a slightly more accurate interpolation of an aliased point. In practice, it is difficult to see any difference between the HRAA effects generated by the GeForce3 and the AA ones created by the GeForce4.

LMA II

Although the original Lightspeed Memory Architecture was first introduced in the GeForce3, the architecture has been upgraded in the GeForce4, and is now significantly advanced over the previous model, in the form of Lightspeed Memory Architecture II (LMA II). Nearly



all of the improvements made to the original architecture have been centered on increasing the memory bandwidth, particularly via refined Z-buffer management.

NVIEW

As an increasing number of designers, video editors and other digital graphics professionals are beginning to run dual monitor setups, nVidia has opted to include a new feature in the GeForce4 called nView. The GeForce4 family of graphics cards all feature two separate RAM, DACs and TDMS controllers, so you can run two monitors from the single card, and in effect double the size of your desktop.

GEFORCE4 TI

nVidia has released three ranges in the GeForce4 series — the all bells-and-whistles Ti (NV25), the budget MX (NV17), and the mobile-oriented GeForce4 Go. Each range consists of cards running off either the NV25 or NV17 chips with varying clock and memory speeds and video RAM. The flagships in the GeForce4 range are the cards that fall under the Ti banner, with the top dog, the Ti4600, running



► You'll wish you were there. Scenes rendered by the GF4 eclipse anything seen on the desktop PC previously.

with a chip clock of 300MHz, and a memory clock of 650MHz.

GEFORCE4 MX

GeForce3 cards are actually more advanced than the GeForce4 MX as the MX doesn't include a vertex shader (dubbed the "nFiniteFX Engine"). In reality, the GeForce4 MX is essentially a continuation of the technology that was employed in the GeForce2 MX, and, unlike the Ti version, is not a groundbreaking new card. Unfortunately, as there isn't an nFiniteFX Engine on the NV17, MX cards do not enjoy full DirectX 8 functionality. However,

Lightspeed Memory Architecture II is included in the MX.

VIDEO ENCODER

Up until this point, one area of complaint from nVidia owners has been the lack of a video encoder for TV output on nVidia cards. As a result, up until the GeForce4 MX, the TV output has been extremely low quality, blurry and poorly centred. The GeForce4 MX now features a video encoder, dubbed the Video Processing Engine (VPE), which dramatically increases the quality when watching DVDs on a conventional television, particularly via refined Z-buffer management.

FRAME-RATE COMPARISON



The graph shows the frame rate of the GeForce4 Ti4600 when tested against the fastest of the Radeon and GeForce3 cards. Tests were conducted using Quake 3 (version 1.17), under Demo001, with 1,024 x 768 x 32-bit resolution, and high-quality textures.

3D MARK 2001 BENCHMARK SCORE



Although the output is clear and the TV-out is much improved, performance of the GeForce4 MX lags behind the Radeon 8500 and the GeForce3.

Leadtek WinFast A170

As was expected, neither of the commercially available GeForce4 MX-based cards that we looked at were lightning fast when benchmarked, and we've seen faster GeForce3 cards. Unfortunately the NV17 chipset doesn't include the nFiniteFX Engine, so the performance of the GeForce4 MX was only slightly faster than the GeForce2s, and nowhere near the blistering frame rates that we were seeing in the nVidia GeForce4 Ti4600 reference card. The MX440 is running on a 270MHz clock speed which is only slightly faster than the 250MHz GeForce2 Ultra. Where the GeForce4-based card does pull away is in memory bandwidth, owing largely to the LMA II's Z occlusion culling, fast Z clear and auto precharge.

Although the Leadtek WinFast A170 is not as fast as some GeForce3 cards, the slightly different Antialiasing techniques employed by the GeForce4s over the GeForce3s means that the screen output looks slightly improved, and the VPE ensures that video playback is high quality. As the GeForce4 MX is aimed towards consumers, nVidia looks to have hit the nail on the head.

The first of the commercially available GeForce4s into our labs were two 64MB NV17-based GeForce4 MX440s. Unfortunately, at the time of writing, no manufacturers were shipping GeForce4 Ti-based cards other than nVidia's reference cards, so we had to be satisfied with the MXs.

The GeForce4 MX is essentially a beefed-up GeForce2, but with a number of visual tweaks added to it, such as Accuviv Antialiasing, LMA II and a Video Processing Engine.

MSI 8861 GeForce4 MX440

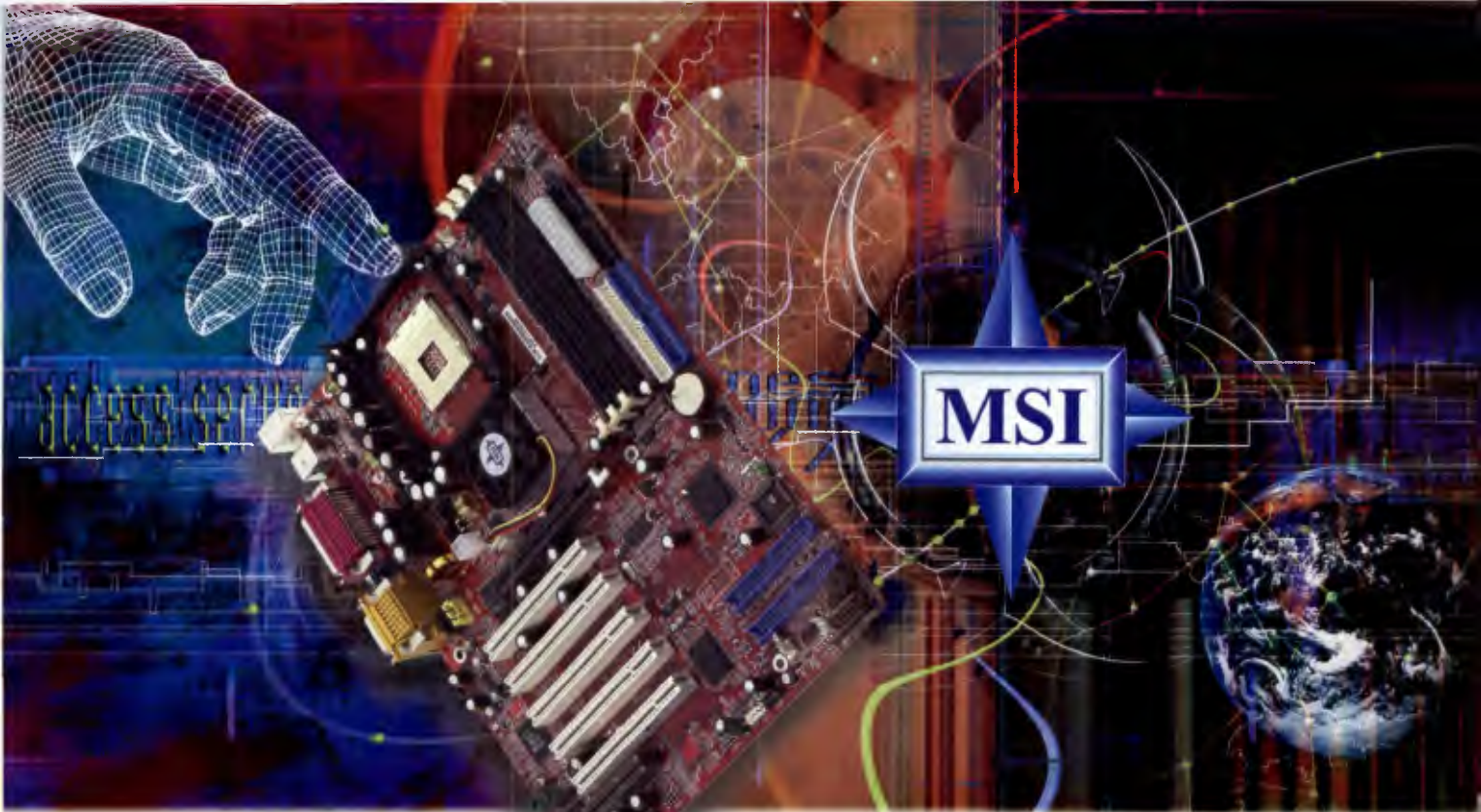
MX offers improved digital video playback and includes a hardware MPEG-2 decoder, which frees up CPU processing power by moving the decoding calculations away from the CPU. In operation, the improvement in quality is immediately obvious, with the playback through the MX card offering a clearer image on screen. The MPEG-2 decoding is done on-chip, so you can have full-screen video playback on a low-power processor. If you are buying a GeForce card and expect to be regularly watching DVDs through your computer, then you'd be better served with a GeForce4 MX over a GeForce3. If, on the other hand, you want all the visual spoils that come with the programmable nFiniteFX Engine, then you will have to shell out for either a GeForce3 or 4. At the end of the day, think of the GeForce4 MX as a supercharged GeForce2 with improved antialiasing. ■

In addition to Leadtek, MSI was also quick to get a retail version of the GeForce4 to us for testing. In benchmarking, both of the cards performed acceptably, with the LMA II offering a slight improvement in memory bandwidth, allowing the MX440s to pull away slightly from the GeForce2 Ultra.

As mentioned previously, the Video Processing Engine included in the GeForce4

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XP'S DV CONNECTION

THE NEWEST ADDITION TO THE WINDOWS FAMILY SPORTS
FEATURES TO MAKE DV EDITING A BREEZE.

There's a new movie adaptation of *The Time Machine* coming out, starring Guy Pearce, and watching the trailer for it reminded me of my own time-travel fantasy. It goes something like this: I go back and meet myself as I was decades earlier, and I say, "Hey, kid — when you grow up, your desktop computer will be 1,000 times faster than it is now, hold almost five orders of magnitude more data, have 512MB of memory, and will do everything from organise photos to let you edit video." And the kid says: "Yeah, right."

Years later, of course, the kid isn't snickering any more. He's doing all of that — including capturing and creating digital video, one of the coolest things you can do with a PC, especially a PC equipped with Windows XP.

HISTORY LESSON

Video capture and creation on the PC is not exactly new. For years a number of companies tried to break into the market by selling capture cards or outboard hardware that plugged into the PC. The biggest problem was not capturing but storage — raw digital video is insanely huge. A single 25-minute piece of video in Mini-DV format, which is compressed at a 5:1 ratio, is just over 6GB. Many of the video-capture companies tried to work around this by halving the resolution or using much higher compression ratios,

but none of it really caught on. When one of my local computer stores went bust several years ago and sold its stock off super cheap, the last things to remain unsold were the video capture and edit solutions, none of which were all that compatible with each other.

Three developments needed to happen before PC-based video editing — or nonlinear video editing — could become a reality. The first was an explosion in the size of PC hard drives. Back when these capture cards were first being ushered into the market, PC hard drives were scarcely larger than 4GB. Today 100GB or more in a drive is commonplace. And with that explosion in size came an acceleration in speed. The days of shelling out wads of cash for expensive SCSI hard disk arrays and controllers for the sake of speed is over; consumer-level drives now rate 66 to 100 megabytes per second throughput. (You can still get higher speeds with a SCSI array, but the baseline is more than enough for video editing).

The second development was a consistent interface between the camera and the computer — the IEEE 1394 standard, also known as FireWire or i.LINK. This not only describes how to shuttle data between the device and the PC, but also provides a consistent mechanism for controlling the camera. With IEEE 1394 all you have to do is

plug the camera into the computer and maybe select its model number from a menu in your capture software.

The third development was a consistent format for digital video. When it was first introduced, Microsoft's AVI (Audio Video Interleaved) format could only be used with a few codecs (coders/decoders) from Microsoft and Intel, among others. Over time, the codec that caught on as the standard for computer-based video was the cross-platform MPEG format. MPEG is the core technology in everything from digital video to DVDs to Apple's QuickTime. In the bad old days, MPEG compression and decompression was handled by hardware on the video card or on an "outboard" piece of hardware (such as a dedicated capture board). Today's computer speeds can support the heavy maths needed for the highly optimised compression MPEG requires — without added hardware.

THE XP SUPPORT ACT

Windows XP, of course, supports all of these things natively: digital video, FireWire links and big hard drives. Digital video plays back in Windows Media Player — although it's not at the full-frame size, you can still play and preview videos. FireWire controllers are supported natively in XP, so you won't need to add anything to make it work, except in rare circumstances.

Windows XP's ability to support big hard drives also extends to file sizes. Working with files larger than 2GB

in older versions of Windows used to be problematic because in the FAT16 and FAT32 file systems there were limitations on how large an individual file could be. Windows XP uses the NTFS file system — one of the many good things it inherited from Windows NT and 2000. NTFS can handle file and volume sizes in the billions of gigabytes, so editing DV files isn't a problem. XP also gives a higher degree of stability. A friend of mine who did video editing in Windows 98 would routinely have the system bomb; when he upgraded to XP, the only thing he had to worry about was Edit DV itself being cranky.

Video standards can also be a little troublesome. Australia uses the PAL standard (25 frames per second), but in the US it's NTSC (29.97fps). Mercifully almost every video editing solution (as well as XP) can recognise and work with the different video formats in existence.

Many video editing programs are also used to edit film by proxy, so they also recognise film-based timebases. Editing film by proxy involves transferring film to video, editing the video, then exporting a cue sheet that tells the negative cutter how to cut the actual film to match the video edits. This is how professional programs like Avid work in the film industry. Since you can edit digital video as much as you like, you can preview your final results electronically before committing yourself to a finished print. Many amateur or underground filmmakers do this as well — they shoot on 8 or 16mm film, transfer the raw footage to video, edit it on the PC, and export the results from their PC directly to a DVD master through their choice of program.



► Built into Windows XP, Microsoft Movie Maker is a basic video-editing tool — it's to video what Notepad is to text processing.

GET ON WITH IT

Now let's say you've already got a camera — what if you want to dive in and start editing right now? Microsoft anticipated this one and built into XP a video-editing application, Windows Movie Maker. It isn't designed to do much more than edit clips together, add sound over it and export the results, but that's all many people need it to do. Besides, you'd be surprised how much you can do with the most minimal tools — some of the early experimental animators did amazing work just by drawing directly on the celluloid.

Movie Maker sports a clip library — a folder which you can fill with video clips by simply dragging and dropping them in. Once dropped in, the files are scanned for scene changes and pre-edited into clips (although you can always merge clips together or split them your own way). Your options for transitions between two clips are limited to cuts or cross-fades — no titling effects, no nothin'.

Dragging a sound file into the timeline dubs it on top of the video. When you're done, you can export the results to a Windows Media 8 file, which gives surprisingly good results at low bit rates, or to another codec of your choice (provided it's installed).

Sure, Movie Maker is limited, but for first-timers, or if you want to throw

clips together on the cheap, it's hard to beat.

HIGHER LEARNING

Now, what if you want to go a step up? Thank Ulead for that — it's one of the best purveyors of economical but powerful multimedia software out there. Among other things, it has a challenger to Photoshop: PhotoImpact. It sells for a fraction of the cost and does more (often better too). Ulead's new entry-level video-editing program is Ulead VideoStudio 6, available in Australia from March. The full version costs about \$365 and is a fair way to get started and then use to venture into fairly sophisticated video editing.

VideoStudio 6 has similar metaphors for editing as Movie Maker, so you can graduate from one to the other without too much trouble. You drag clips from a library into a timeline, make adjustments freehand or by typing in numbers, and export the results when you're done. VideoStudio, though, supports more than just edits between clips — there are fades, dissolves, heaps of transitions, video overlay, text and titling options, and more flexible audio editing.

The best feature, however, is direct export to DVD-compatible discs. This includes ordinary CD-ROMs, which can hold about 20 to 30 minutes of DVD



► Ulead VideoStudio 6 is the next step up from Movie Maker, with transitions, titling, effects and DVD export.

video, and will play in just about any DVD player transparently. VideoStudio 6 also has some of the features found in Ulead's higher-end products, such as the ability to intelligently render for playback only those parts of the project that you have made changes to, making your work go faster.

If you want to perform more advanced editing than VideoStudio provides, Ulead also makes MediaStudio Pro, which even gives top-shelf program Adobe Premiere some stiff competition — and I like Premiere. MediaStudio Pro is intended for people who want to work on video professionally, not just as a hobby. It offers multiple video and audio tracks, video rotoscoping, advanced title generation, a gigantic library of transitions, and an interface which is designed for professional work. It's more powerful and robust, but also more expensive — about \$1,150. For \$525 you can buy The Director's Cut edition but it doesn't have the advanced titling or rotoscoping features.

You could also go all the way (as in \$1,459) and pick up Adobe Premiere 6.0. This is the 300kg gorilla in the editing mist for the PC, but that isn't to say it's perfect. The learning curve can be steep, and not everyone

has the cash to spare. Still, it has more features than all of the above programs put together.

The one problem with Premiere is its clumsy handling of titles. Both Ulead products let you click and add titles in seconds, but in Premiere each title pane has to be saved in a separate file. I use both programs where they're strongest — Premiere for most editing and assembly, and MediaStudio for titling effects — but not everyone has that luxury.

ON THE CHEAP

If you've got shallow pockets, the picture's grim. There isn't a lot of free or shareware video-editing software around. The market is slowly opening up, though. Adamation has released a product for US\$29 called personalStudio 2.0, which is on a par with Ulead's VideoStudio — same style of interface, similar level of power but no DVD export facility. It does support IEEE 1394 in and out, though, which is a big plus. There's also MGI VideoWave, but I'm not impressed with it — Ulead does more with less.

XP AND IEEE 1394

When you install XP in a system that has a 1394 controller, a separate

network connection is created for it. This sometimes confuses people initially, but it can be used to great advantage. If you have XP on a machine with a 1394 controller, open Network Connections and you should see a new network connector in there with the name "1394 Connection". What's this all about?

If you have the right type of 1394 cable, you can create network links between two machines with the 1394 bus by simply plugging one into the other. Speeds of over 200 megabits per second are possible with this type of link — much faster than working with Ethernet, that's for sure. So if you want to shove data between two XP machines, including DV data, consider using this. However, do note that the only network protocol supported over a 1394 link is TCP/IP — no IPX. This isn't a big loss for most people, especially since IPX support has been gradually phased out of Windows. Some people liked it as a way to route exclusively on an internal network, but it has more drawbacks than advantages in the long run.

DV AS DATA STORAGE

I was once asked the question: since DV tapes can store quite a bit (dozens of gigs), can't they be used as an offline backup or data-storage medium? It sounds like a nice idea, but it's not terribly practical. For one thing, the way DV cameras write their information to tape does not provide for error checking once the data has been written. If something gets lost on the way to the tape, it's gone for good, and when you're dealing with gigs of data from which one missing piece can be fatal, that's bad. ■

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MULTILINGUAL OFFICE BROWSER

WITH AN OS THAT NOW INCLUDES MORE THAN 100 LANGUAGES, MICROSOFT HAS MADE WINDOWS XP WIDELY ACCESSIBLE TO DIFFERENT CULTURES.

Multi-language support is a boon to the global office. It means that someone working in a multinational company can travel to a branch in another country, sit down at a computer connected to the company's international network and have their own language version of Windows load when they log on.

With the release of the retail version of XP, many people thought they were also getting a true multi-language operating system. However, as opposed to corporate versions, the retail program has English menus, windows and warnings. Multi-language in this case means you can read, edit and create text in other languages. There are 33 languages covered in what is called the Multi-language Pack, and corporate buyers of Office XP can also buy the pack which provides an Office user interface in several languages.

You can also choose the way your keyboard works, and usually includes a virtual native keyboard. For example, with German, the default keyboard will work the same as a physical German keyboard, just without the proper labels on the keys. However, with Japanese, the keyboard layout is



► Default input languages load when each user logs on. You could label them by specifying each language with the user's name.

the usual US one, and the phonetic inputs are converted to Japanese script after they're keyed in.

Including variants, close to 100 input languages are included on the XP installation CD, including seven Indian languages and variations of Chinese.

Users can be set up to have their input language automatically load when they log on. One person can create a document in Japanese, and

then someone else could log on and start typing in Hebrew, without even closing the Japanese document.

You can load extra languages while you're first installing XP, but this can take up a lot of room — up to 300MB for each language. If you want to be able to enter text in Chinese, Japanese or Korean, you'll need another 230MB worth of files to support the input method, even if you only use one of these languages.

ADDING INPUT LANGUAGES

You'll need your Windows XP disk for this step. Go to Start, Control Panel and then Date, Time, Language and Regional Options. Under Pick a Task, select Add Other Languages.

To install languages that have complex characters, tick the box for the language group you want supported and press OK. You'll be prompted to restart. Now you should be able to install languages with complex characters. Go to Start, Control Panel and Date, Time, Language and Regional Options again, then under Pick a Task, select Add Other Languages and go to the Languages tab.

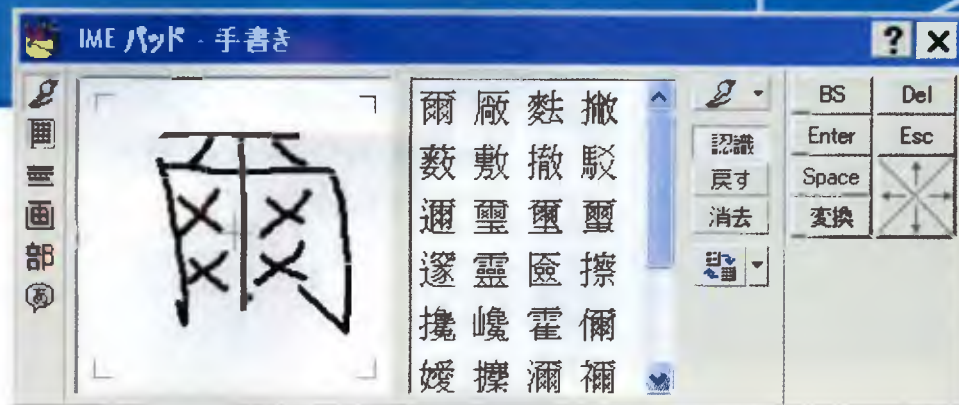
Click on the Details button. The language at the top, the Default input language, is what you installed when you set up XP. Under Installed Services, press the Add button. You can set the default input language and install several input methods.

Press the Add button and select a language from the Input language pull-down menu. The Keyboard layout/IME will now show the default entry method for this language. Leave this as it is for the moment. You can add extra keyboard-entry modes later. Press OK.

Now go to the Advanced tab. Some programs in other languages don't use Unicode. Decide which language programs you want to use, and install the non-Unicode support for them, e.g. if you plan to use only Japanese language programs, choose Japanese from the language menu at the top, and press Apply. If you want to include another language, go back to the languages menu, select it and press Apply. When the files have installed, follow the prompt to restart.

MULTIPLE USERS

To have a different language set up for each user, first add the users



► You can select characters by drawing them freehand.

for whom you need settings and passwords. You do this in Start, Control Panel, User Accounts, "Add a new user".

After this, log off, then log on as one of the users for whom you want to change the input language. Go back to Start, Control Panel and Date, Time, Language and Regional Options. Select the Languages tab and press Details to open the Settings window.

On the top of this window, the "Default language" will be American English. Pull this menu down and select the input language you need for this user. If you haven't yet installed the language for any other user, it won't be in the list, so press Add further down the same window. Choose your language from the list and press OK.

Now that language will appear in the Default languages list at the top of the Settings window. Select it and press OK.

Log off and log back on again as the new user. The floating language bar for the new language you've assigned to the user will be on the desktop.

USING MULTI-LANGUAGE INPUT

The language inputs in XP are similar to the ones users would be accustomed to in their home countries. We tried the Japanese input system and found it much less quirky than those of earlier operating systems. Japanese also has a scratchpad input, so you can draw characters freehand, possible matches coming up for use within the document.

You can even use different languages and character sets in the one Word document. Just click on the floating language taskbar and pull down the list of installed languages. Choose the first language you want to use and enter your text. Then choose a different language from the taskbar and enter your text in that language, and so on. It is truly polyglot. ■

Installing and using IMEs

Input Method Editors or IMEs allow you to enter text from an ordinary keyboard in English operating systems (from Windows 95 and NT4 onwards) and English programs, and have it come up in a different script.

IMEs are available for download at www.microsoft.com/msdownload/iebuild/ime5_win32/en/ime5_win32.htm, but for your convenience we've included the Global IMEs for Korean, Simplified Chinese and Traditional Chinese character sets, on this month's cover CD set. Installing the IME with the Language Pack gives you the extra files you'd otherwise need to get from your operating system CD.

Once it's installed and you've restarted, go to Outlook Express and check the settings in Tools, Options, Send. Under Mail Sending Format, make sure HTML is selected and press OK. In Outlook adjustments are made in Tools, Options, Mail Format — under Message Format make sure the pull-down menu for Send is set to HTML. Press OK.

Now, when you use Outlook, Outlook Express, Internet Explorer or Word you'll see next to your clock a small EN on a dark blue background. To enter text in your newly installed language, click on where you want to start entering text and then click on the EN symbol, which will bring up a menu that includes the input language you've just installed. In Outlook, whenever you put your cursor on a spot where the IME language can't be entered, the IME button will disappear and have to be manually reset.

Before entering text, you also need to select the character sets you'll use. For Japanese, you'd choose between Hiragana, Katakana and Roman characters, a total of six entry modes. To set this, click on the A left of the floating taskbar and pick the character set from the list. Doing this switches on the IME.

CLEM ROBERTS has taught English in Japan and restored old houses. Now he runs a bookkeeping business and dabbles in freelance journalism. He can be contacted at clemroberts@optushome.com.au.

BEAM ME, BABY!

YOU CAN BEAM TO ANOTHER HANDHELD, A PC, OR EVEN A PHONE.
IT'S VERY USEFUL AND, OF COURSE, VERY IMPRESSIVE.

Ever seen two Palm enthusiasts meet? There's the inevitable "Hey what's on your Palm?", and the best apps are inspected. Often this ends with some apps beamed between the two Palms.

Beaming is the quickest and coolest way to share stuff between Palm OS handhelds, and it certainly looks impressive to non-Palm "muggles".

INFRA-RED 101

Beaming first appeared with the Palm III, and it's been a fixture of all Palm OS devices since.

The hardware is a simple infra-red "eye" designed to meet the Infrared Data Association (IrDA — www.irda.org) standard. The OS drives the infra-red port according to another IrDA protocol, which makes the Palm 100% compatible with any IrDA-compliant device.

First, double-check that beaming is enabled on your Palm (it's a default setting). Run the Prefs applet, choose the General page from the drop-down menu in the top-right corner of the screen, and set Beam Receive to On.

The most common way people use beaming is to swap digital versions of business cards. Begin by creating your own business card in the Palm's address book. If you're planning to swap cards on overseas trips or with foreign visitors, I suggest you write your phone number in the international format.

I also recommend creating two cards, one business and one personal,

each with the relevant address and phone numbers, so you don't reveal your private details to everyone.

Now, if you open the card, tap the Record menu and choose Select Business Card, you'll be able to beam your card just by holding down the Palm's hardware address button for two seconds. It doesn't even matter which applet you're using at the time.

When you start swapping cards, it's almost impossible to remember who is who. Unlike a conventional card that you file in your card holder or wallet and can review later (I usually jot notes about the person or conversation on the back of their card and then enter them all into Outlook later), a beamed card instantly disappears into the digital ether of your Palm's address book, where it can be almost impossible to find again.

WHAT YOU CAN AND CAN'T BEAM

You can beam anyone's card by switching to the address book, selecting the card and choosing Beam Address from the Record menu. You can swap diary appointments, to-do items and memo notes in a similar way. And, with a few notable exceptions, you can also beam programs to fellow Palmists.

The quickest way to beam in Palm OS 4 is by using the command stroke — a diagonal from bottom-left to upper-right in the Graffiti area — and then choosing the beam icon from the pop-up toolbar. If an item (such as a contact

card, appointment or memo pad entry) is already open, it will be beamed; if you're in the main "home" screen, you'll be presented with the Beam applet and a list of all the files that can be beamed.

Not all Palm programs can be beamed. For example, you can't send anything stored in ROM — the applets belonging to the Palm OS itself. This sounds pretty obvious, because you'd imagine that everyone's got the same built-in applets, but they're *not* actually the same. Palm OS 4 has the Note Pad jotter, for instance, but you can't beam this to a Palm OS 3.5 user.

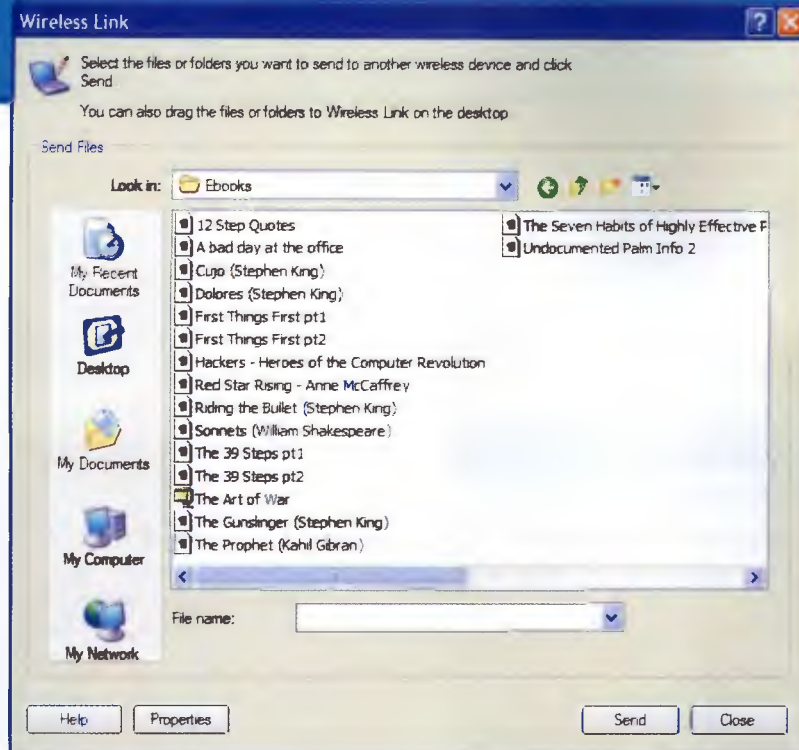
Most commercial software and registered copies of shareware are locked by the programmers to prevent beaming, but in some cases the software allows itself to be beamed in an unregistered or trialware form.

The standard Palm OS beaming software is unable to recognise a number of file types, including ebooks, data files belonging to apps, and hacks. And these are the kinds of software that Palm fans love to swap.

BEAM BUDDIES

You can get around most limits by adding some special tools to your Palm.

Programs like BeamBox (available at www.inkverse.com and on our cover CD set) and BeamPRO (www.ecamm.com/palm/beampro) allow you to send almost anything on your Palm via the infra-red beam, and can quickly filter files into groups such as apps, hacks, data sets, ebooks and even PQA or Web-clipping clients. They also let you nominate your most frequently beamed



► Windows XP sports the clever ability to detect an IR-equipped Palm nearby, and offers to send files via infra-red.

goodies as favourites, which can be sent *en masse* with a single stroke.

BeamPRO even allows you to "batch beam", or send a number of appointments, cards, files and databases in a single beam session.

Some program launchers that replace the Palm's main menu or "home" screen have enhanced beaming features. These include Launch 'Em and MegaLauncher, as well as file managers like Filez. The BeamCrack utility disables the no-beam bit on each piece of data on your Palm.

JUST FOR FUN . . .

Beaming to fellow Palmists doesn't have to be restricted to business-minded files such as contact cards and appointments. There are plenty of two-player infra-red games to try, including chess, checkers and, of course, the classic battleship.

Even better are infra-red-enabled messaging and chat tools, some of which even have a shared sketchpad.

We've put a few samples on this month's CD set, and there are plenty more to be found on the Web.

CHANGE THE CHANNEL

Perhaps the coolest way you can use the infra-red on your Palm is as a remote

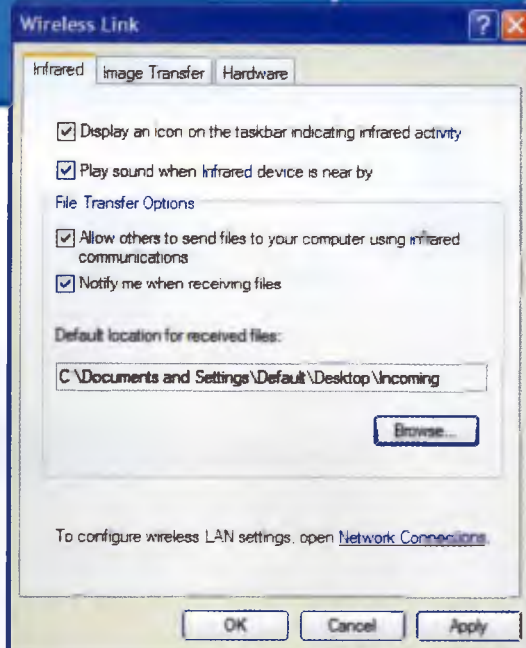
control for your TV, stereo system, VCR and DVD deck.

OmniRemote (featured on this month's CD set and also available from www.pacificnetek.com) mimics the pulses of standard remote controls and allows you to draw an onscreen interface with buttons for changing stations, volume, forward, rewind and every other function available on a conventional remote.

The range is limited to a few metres owing to the relatively weak infra-red output of the Palm, but you can buy clip-on boosters to pump up the strength of the beam.

OF PALMS AND PHONES

Another impressive trick is to get your Palm and your infra-red-equipped mobile phone working together. A quick hunt around supersites such as PalmGear (www.palmgear.com) reveals plenty of "phoneware" programs which can: sync your Palm's address book to your phone; let you read and write SMS messages using the Palm's larger screen and Graffiti keypad; and download ringtones, logos and other graphics.



► Adjusting the settings for infra-red communications in XP.

Different phones implement infra-red differently, so some trial and error is involved — especially if you use a Nokia 6110, 6150 or 6210, which use a "direct infra-red" beam instead of the standard IrDA protocol.

PALM PRINTS

Being able to print straight from your Palm without having to mess with connectors and cables is very handy. IrPrint, InStep Print, TealPrint and

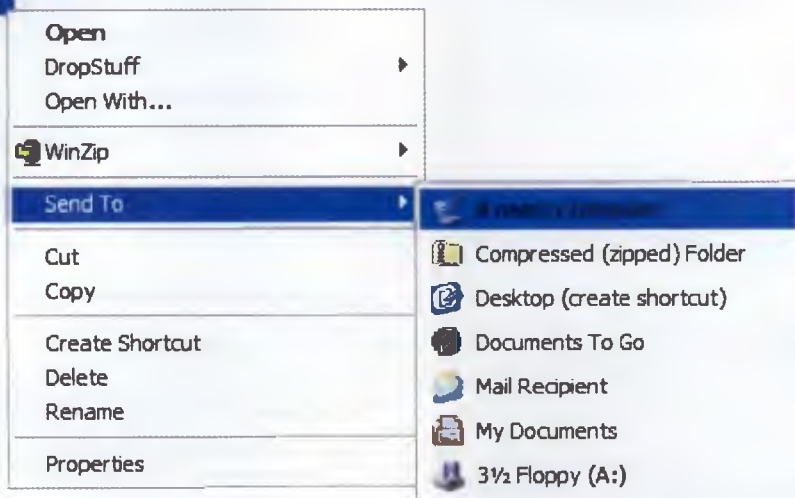
TROUBLESHOOTING TIPS

Because you're dealing with light, ambient light levels can help or hinder beaming. I've found fluorescent lighting can sometimes be a pain — covering the Palm with your hand provides some "shade" that seems to stop fluoro-interference.

A clear line of sight with a range of about 1m is necessary between infra-red devices but they don't have to be perfectly lined up. Because infra-red beams have a pretty wide spray, you can usually get away with an angle of around 45°, as long as the devices don't move out of physical range — the more head-on they are, the further apart they can be. Infra-red can also work at some very odd angles due to reflection and refraction of the signal source!

Overclocking utilities have been known to disable beaming and HotSync, so if you've given your Palm a little speed boost, wind the throttle back and try again.

Beaming large files can fail if you don't have enough spare memory on your Palm. You'll need twice as much space as the file itself, because the Palm must first place the file in its buffer, and then, when you choose to accept the transmission, copy it into system memory. Otherwise, the file will be received onto your Palm but you'll get an error message saying there's not enough memory. The attempted install then fails, and the file is lost completely.



► The quickest way to load a new applet or document on your Palm — use XP's pop-up Send To menu.

PrintBoy (all available at PalmGear) allow you to send any document from your Palm to any printer with an infra-red port. This includes several of Hewlett-Packard's LaserJet office series plus all of Canon's portable BJC inkjets.

PALM TO PC VIA INFRA-RED

Have you ever needed to synchronise your Palm against your notebook PC but found yourself without the HotSync cable? Relax — the infra-red ports on your palmtop and laptop will do just fine.

It may not be as fast as you're used to, and it will almost certainly require some experimentation to get everything working right, but wireless synchronisation can be a godsend. It also means there's one less cable to carry around when you're on the road.

Depending on the version of Windows you're running, things are most likely to go pear-shaped on your notebook. One possible problem stems from the fact that Windows 2000's implementation of infra-red works differently to Windows 98's — an issue that Palm has addressed with a dedicated support page on its Web site (www.palm.com/support/helpnotes/win2k.html).

The quickest fix involves disabling the option to "Use Wireless Link to transfer images from a digital camera to your computer" (in the Control Panel's Wireless Link applet), and sometimes soft resetting the Palm prior to the first Windows 2000 infra-red HotSync.

You'll also need to enable the infra-red option in the Windows HotSync program, and set the Palm's HotSync option to "IR to PC/Handheld".

If you have a notebook running Windows XP, you'll find XP has some very infra-red-friendly tricks. Activate the notebook's infra-red beam (using Control Panel, Wireless Link), and as soon as your Palm is in range, XP will detect it and notify you with a pop-up message in the system tray. An icon called "Send files to another computer" appears on the desktop, and the right-click Send To menu has a new destination — "a nearby computer". These items remain as long as the infra-red link is open.

You can use them to send any Palm-recognised file type to your handheld. This includes ebooks and hacks, plus PRC and PDB files, which are automatically installed and appear on the Palm's main menu

screen (in the Unfiled category). Plain text files can also be moved across — the Palm OS lobs these into the Memo pad, splitting it into separate entries if the individual file is larger than 4KB.

This process is *not* the same as running a HotSync — it won't match up your Palm and Windows calendars or address books, for instance. Nevertheless, it's ideal for getting new apps or data files onto your Palm, especially if you've left the HotSync cable at home.

Again, if you decide to fiddle with infra-red, be prepared to spend plenty of time on it. Make full use of support Web sites or newsgroups, especially the alt.comp.sys.palmtops.pilot newsgroup.

Despite the efforts of the IrDA and the industry as a whole, infra-red has never been anywhere near as easy to use as it should be. In the next few years, I believe it will be completely replaced by Bluetooth, despite a few early stumbles by this low-power radio technology. For now, however, infra-red lets you enjoy some of the more basic benefits of Bluetooth without the wait. ■

Beaming and batteries

Beaming takes a bit of a toll on your Palm's batteries. It's not just the physical process of firing up the infra-red transmitter — whenever your Palm is turned on, it keeps an eye open for other infra-red devices within range.

This constant sniffing for signals isn't an issue if your Palm has a rechargeable battery, because it recharges every time it's docked in the PC-connected cradle. However, if you like to squeeze every bit of energy out of your dry-cell batteries, you can disable the infra-red awareness in the Prefs applet.

If a beaming situation arises, you can temporarily activate the infra-red as a one-off with the "dot-i" shortcut. This is one of several largely undocumented commands in the Palm OS. Like all shortcuts, you start with the shortcut symbol (detailed in your Palm handbook), followed by dot (double-tap) in the Graffiti writing area, and then the stroke for the letter "i" (case doesn't matter). This enables incoming data to be received for a short time.

DAVID FLYNN bought his first handheld, an original Pilot 1000, in 1996. He's since owned several devices for the Palm and Pocket PC platforms and is one of Australia's most handheld-savvy journalists.

SMART MENUS

DISCOVER HOW TO USE FLASH
IN MODERATION TO CREATE A
SITE THAT'S CLASSY AND FAST.



Practically every Flash site that I visit follows the same pattern: full-window Flash movie, lengthy preloader and some introductory animation, culminating in an all-Flash interface. The idea of foregoing regular HTML in favour of 100% Flash pages started about three years ago, and unfortunately, it caught on. They aren't easy to bookmark and they don't make the best use of the browser.

Favourites and bookmarks are fundamental browser features, yet single-page Flash sites don't support them properly; the only thing that can be bookmarked is the entry page.

As Flash's text-handling and data features have improved, a great many developers have ditched HTML text altogether and gone for SWF sites. This is fine for novel or experimental work,

► The Emerils.com site balances HTML text with Flash animation.

but it is not advisable for anything mainstream. Sites that mix HTML and Flash are faster and more user-friendly.

FEATURED SITE: EMERILS.COM

Emeril Lagasse is a world-renowned chef, and his Web site www.emerils.com illustrates how Flash can be used to add to a page. It's the kind of thing that you'd do with dynamic HTML if it wasn't so finicky to use.

The body text (recipes, restaurant descriptions, a biography and so on) is all displayed with HTML, but on each page there is an animated Flash menu.

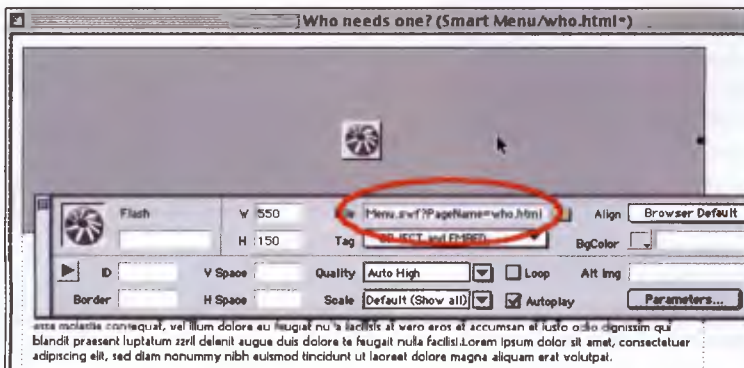
The Emerils menu seems to "know" which page you're currently viewing and it displays the title and highlights the current section. The developers kludged

this by manually creating a new movie for each page, which is not the way we would do it at the Flash Workshop. So, I'm going to show you how to make a menu that does the same thing with one SWF file and a bit of ActionScript magic.

HOW TO MAKE IT

I built an example of my own using assets from the fictional company AskPad Inc, maker of the amazing yet even more fictional AskPad device. You can find all the source files on disc 1 of this month's CD set.

The problem with Flash menus recurring over several pages is that they don't remember. Normally, you'd either have to make the menu exactly the same in all cases or export unique

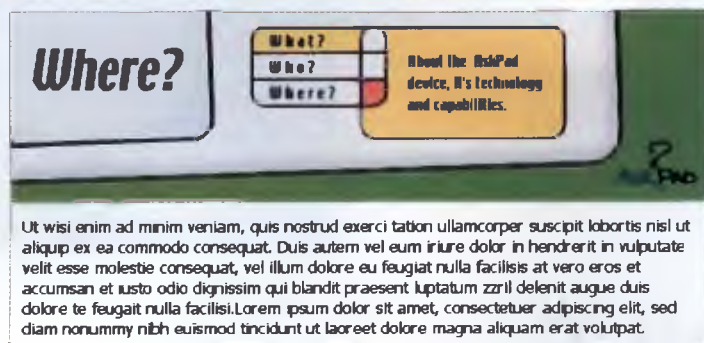


► The filename of the current page is added to the Flash movie's URL.

Stop() right there!

Both the SectionTitles and SectionIndicator movie clips are being used like slideshows — sets of frames that can be displayed at will. But the default behaviour of a movie clip in Flash is to loop, so you have to prevent that from happening manually, otherwise the effects will be messed up.

To stop a movie clip from looping, select the first keyframe and open the Actions panel. Add a simple stop() action, and you're set. Often it helps to clear that first keyframe if you're using it to display various graphics. In my example, the first frames hold the default page information, so there's no need to clear them out.



► The sample menu "knows" what page it is on, and provides some visual feedback.

versions for every page.

The first option is not usually acceptable, because you want to provide some visual feedback about where the user is. And exporting multiple different versions will get messy for a site bigger than a few pages.

AN SWF FOR MULTIPLE PAGES

In my example site, I generated three HTML pages: `index.html`, `who.html` and `where.html`. Each page features the menu SWF at the top, with "designer's text" filling the remainder. If you're ever in need of a good Lorem Ipsum generator (a tool that generates dummy text to fill space), I recommend www.subterranean.com/loremipsum.shtml.

EMBEDDING DATA IN A FILE PATH

The trick that I've used here is to embed some additional data into the HTML. Usually, images and Flash files are simply added to the HTML with their filename, for example:

```
<embed src="movie.swf">
```

However, did you know that you can feed variables into your Flash file just by adding them to the file path?

Remember instance names

It's easy to overlook, but movie clip instances need to be named using the Instance panel if they are to be addressable in ActionScript. Without an instance name, a movie clip will still work just the same internally, but you can't control it or store variables in it from the outside.

Here I will add a variable `x` and make it equal to 100:

```
<embed src="movie.swf?x=100">
```

Using this technique, you can pass all sorts of data into Flash Player, whether it be static (typed by hand) or dynamically generated by a server-side script. For the menu example, a variable `PageName` has been added to clue the movie in on which is the current page.

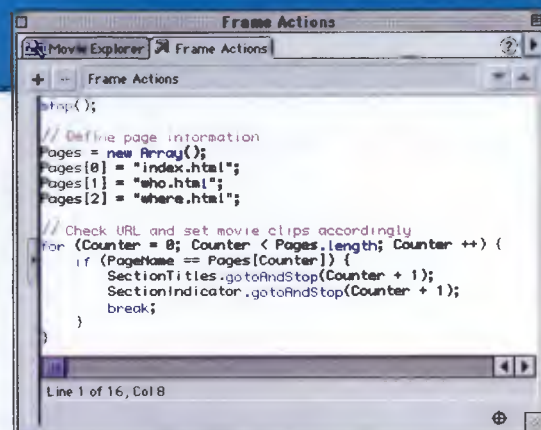
WHERE THE DATA GOES

Any data passed in this way appears in the main timeline (`_root` or `_level0` for multi-level movies), and is available before the first frame plays. So you can always be sure that the information is there straight away, with no timing hassles. The variables take on the exact same name you write into the URL, for instance `"movie.swf?x=100"` produces a variable `_root.x`.

CHECKING THE DATA AGAINST AN ARRAY

Now, in order for the data being passed in to actually mean anything, there needs to be some kind of checking mechanism inside the menu movie itself. In this example, I created an ActionScript array named `Pages` to store the three different names used to make up the site.

```
Pages = new Array();
Pages[0] = "index.html";
Pages[1] = "who.html";
Pages[2] = "where.html";
```



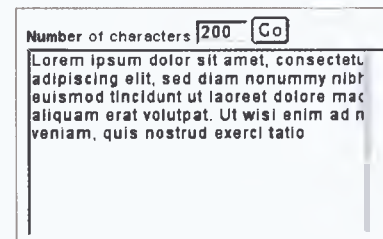
► The Actions panel is used to define the `Pages` array on the first keyframe.

Notice that array elements are numbered beginning with 0, rather than 1. This is important to remember when using the `length` property of an array object, because even if the length is 3, the index of the last element will still only be 2 (since the first is 0).

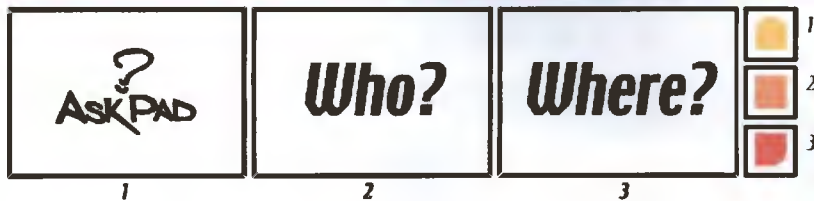
Along with the array, the following script is located on the first keyframe of the movie:

```
for (Counter = 0; Counter < Pages.length;
Counter++) {
    if (PageName ==
Pages[Counter]) {
        SectionTitles.gotoAndStop(Counter + 1);
        SectionIndicator.gotoAndStop(Counter +
1);
        break;
    }
}
```

The idea is to take the `PageName` value being passed in via the HTML file, and compare it to each of the elements in the `Pages` array. The current page should match one of the filenames, so the movie can display the appropriate visual information.



► Generate dummy text to fill out your page designs.



► Here you can see the frame contents of the two movie clips, SectionTitles and SectionIndicator.

USING SCRIPT TO DISPLAY MOVIE CLIP "STATES"

When the loop arrives at a matching set of PageName and Pages[Counter] values, it uses the gotoAndStop() method of two movie clips, forcing them to display frames that contain visuals specific to this page. SectionTitles contains title graphics for each page: the AskPad logo, a Who? graphic and a Where? graphic. SectionIndicator contains three coloured thumbs, corresponding to the menu buttons.

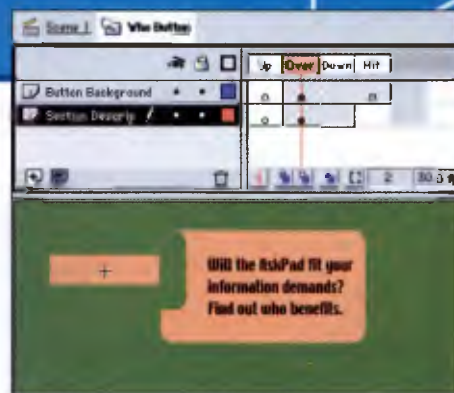
Because the Counter variable is the index of the current element in the Pages array, it needs to be altered prior to being fed into the gotoAndStop() action. Remember,

arrays are numbered from zero, but frames are numbered from 1. So, gotoAndStop(Counter + 1) solves the mismatch.

EASY ROLLOVER BUTTONS

At this point, the menu movie accurately detects what page it is being used on, and displays the correct title and section indicator. The final step is to add the menu buttons.

Looking back at Emerils.com, each button triggers a description of the corresponding page when the mouse is rolled over it. I wanted to achieve the same effect, but without resorting to more complicated movie clip setups. So, in my example I used regular button symbols, but if you take a look



► Placing rollover graphics in the Over state is a quick way to enhance a button.

inside you'll discover something extra in the Over and Down states.

Nesting extra graphics in this way is great for quick rollover effects, especially when animation is not required.

PUTTING IT ALL TOGETHER

With the buttons and page indicators in place, the effect is complete. Hand-coded solutions such as this scale nicely for sites containing up to about 25 individual pages. Any more than that, and you should consider a database-driven solution such as ColdFusion or Generator. ■

DAVID EMBERTON is a freelance author and Web developer. He writes for CNET Networks, InformIT and ZDNet, and is author of the Flash Magic series. He can be contacted at david@emberton.com.

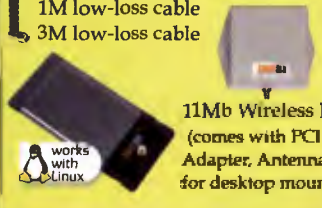
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COLOUR YOUR WORLD

COLOURING A GREYSCALE IMAGE IS NOT DIFFICULT. THE REAL TRICK IS MAKING IT LOOK BELIEVABLE.

Some time ago, a co-worker asked me to restore an old black and white picture that her brother had torn in half when they were both young. I thought it might be fun to add colour to the image, so I decided to use this as an opportunity to experiment. The steps illustrated below do not apply only to this image, but work on any black and white (greyscale) image. So, if you have your own image, dig it out and follow along.

CHOOSING THE RIGHT PATH

Begin by opening up Baby-Gray.psd (which you can find on this month's CD set) or by loading your own greyscale image. If the Embedded Profile Mismatch dialog box appears, choose "Use the embedded profile" (unless you are familiar with Colour Management and prefer another option).

After the image has loaded, you'll notice that it contains a Levels adjustment layer that I've added to

increase the contrast of the image. Leave that layer in there for now; you may need it to adjust the contrast again once you have added colour to the image.

Before you can add any colour, you have to convert the image to RGB mode by choosing Image, Mode, RGB Colour (from the menus). A dialog will ask you if you wish to flatten the image; select Don't Flatten. Choose File, Save As (Ctrl-Shift-S; Mac users press Command-Shift-S), to save the image as Baby-Color.psd.

Because the example image looks quite old, the colours you add should be very subtle. Colouring the image is a relatively easy task; the true challenge lies in selecting the regions that you wish to colour accurately, and there is no better tool for this than the Pen (P).

To make editing and reworking easier, you can colour each part of this image (the hair, face, lips, eyes and so on) on separate layers. You'll see later that this can also save a lot of time. To keep things organised, use the new layer sets in Photoshop 6. First, create a set (by clicking on the folder icon at the bottom of the Layers palette) and name it BABY (and choose a set colour if you like).

Begin by creating a path (selection) of the baby's face and hand. With the BABY set selected,

add a new layer (Ctrl-Shift-N or click the page icon at the bottom of the Layers palette) and name it SKIN. Select the Pen tool (P) or Polygonal Lasso (L) if you prefer, and press the "Create new work" path button in the Options palette. Zoom in (Ctrl-Alt-+; Mac users press Command-Option-+) on the face and then draw a path around the face.

Once you are happy with the path that you have drawn, press the subtract key (-) — or the Subtract button on the Options palette — and draw two subtractive sub-paths, one for each eye.

Set the foreground colour to a light skin colour (R246,G210,B183 [#F6D2B7]), then choose Solid Colour from the New Fill/Adjustment Layer button at the bottom of the Layers palette. The current layer becomes a shape layer and our path becomes the associated clipping path.

At the top of the Layers palette, choose Colour (Alt-Shift-C) from the Blending Mode drop-down and enter 30% (3) for the Opacity of the current layer. The skin may look too light at this point, but remember

Selections

For those of you who have not yet mastered the Pen tool, you can achieve nearly the same results by using the Polygonal Lasso (L) — or freehand Lasso (L) if you have an incredibly steady hand and/or a stylus.

For those using selections, simply fill the current selection with foreground colour (Alt-Backspace or Edit, Fill), instead of choosing a Colour Fill layer.

TIP

Using the Move tool (V), you can right-click (Mac users Control-click) in the canvas window to choose a layer under the mouse from the resulting context menu. Unfortunately, however, the context menu does not distinguish between layers and sets, so if you get into the habit of naming sets in upper case and layers in lower case, you'll easily be able to distinguish the two in the right-click menu.

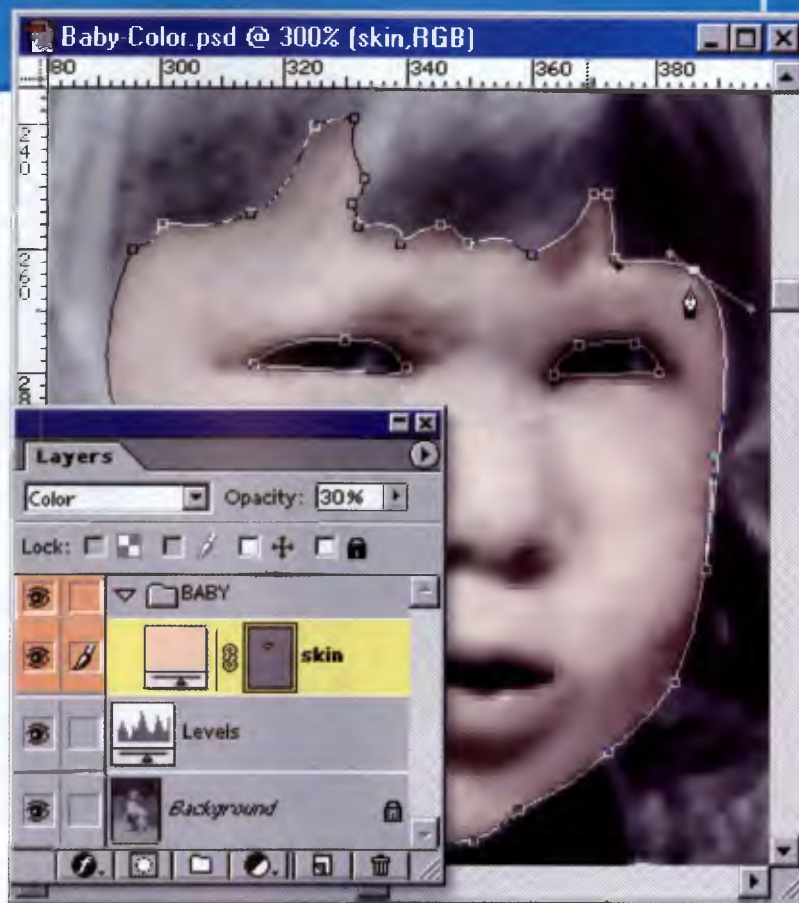
that you want a subtle look. Besides, as you're creating everything on separate layers, you can always tweak the individual layer opacities later. This might be a good point at which to save your work, too.

Since the hand should be the same colour as the face, add another clipping path to the current layer. With the Pen tool still active, press the plus key (+) or the Add button on the Options palette, and draw a path around the hand.

Next, colour the lips and eyes — each on separate layers — by repeating the above procedure. Add a new layer and name it appropriately (for example, LIPS followed by EYES). Zoom in and draw the corresponding path(s). Choose a foreground colour, such as pink (R255,G180,B180 [#FFB4B4]) for the lips and dark blue (R56,G66,B121 [#384279]) for the eyes.

Then choose Solid Color from the New Fill/Adjustment Layer button. Finally, set the layer-blending mode to Color and adjust the opacity; for instance, use 25% (25) for the lips and 40% (4) for the eyes.

The table below shows the colour (RGB and Hex) and opacity used for each layer (organised by sets). The colours listed are available in a



► Don't worry if the colours you choose first appear too light or dark — you can adjust the individual layer opacities as you work.

swatch named BabyColors.aco on this month's CD set.

All right, time to tangle with the hair (ahem). This is a complicated path to create, but you don't have to trace around the whole thing. Since you have already created a path for the face, you can trace around the outside of the hair and then subtract

the face path to create the inside. Select the Pen tool (P) and begin tracing the outside perimeter of the hair, beginning where the hair meets the chin — it doesn't matter which side of the face. Once you get to the other side, where the hair meets the chin again, close the path (straight across the face) by joining it to the first point.

In the Layers palette, select the SKIN layer's clipping path by clicking on its associated thumbnail. Display the Paths palette (Window, Show Paths) and ensure that the skin Clipping Path is selected. Copy (Ctrl-C or Edit, Copy) the path; select the Work Path (containing the outline of the hair) and then paste (Ctrl-V or Edit, Paste) the skin path on top of the hair path. Press the Subtract button (-) in the Options palette and then press the Combine button.

A side effect of combining the two paths is that the hair path contains the eye sub-paths from the skin

COLOUR AND OPACITY				
Set Name	Layer Name	Opacity	RGB Colour	Hex Colour
BABY	hair	35%	R157,G155,B101	#9D9B65
	eyes	40%	R56,G66,B121	#384279
	lips	25%	R255,G180,B180	#FFB4B4
	skin	30%	R246,G210,B183	#F6D2B7
CLOTHES	shirt	10%	R0,G0,B248	#0000F8
	pants	12%	R255,G0,B0	#FF0000
	socks	10%	R0,G0,B255	#0000FF
DUCK	sneakers	10%	R0,G0,B255	#0000FF
	eye	8%	R0,G255,B255	#00FFFF
	beak	20%	R255,G206,B64	#FFCE40
BACKGROUND	body	10%	R255,G255,B0	#FFFF00
	wheels	15%	R0,G133,B0	#008500
	fence	20%	R53,G33,B22	#352116
	grass	2%	R30,G109,B11	#1E6D0B
	sidewalk	80%	R115,G108,B106	#736C6A

path. Select both sub-paths (in the Work Path) using the Direct Selection tool (A) and delete them (Delete or Edit, Clear).

To complete the hair, set the foreground colour to a dirty blonde (R157,G155,B101 [#9D9B65]), then choose Solid Color from the New Fill/Adjustment Layer button. Finally, set the layer blending mode to Color and enter 35% (35) for the layer opacity. Save the image.

Use the techniques I've shown you to complete the rest of the paths required for the child, the duck and the background. To save yourself time and work, create paths for foreground elements first, then subtract them from background paths (as you did for the hair).

Once you have completed all of the paths, use the Levels layer to correct the tonal range of the image. I used Inputs Levels of 3 (Black), 0.70 (Gamma) and 191 (White). Save the PSD (Ctrl-S or File, Save) and then, if you wish, save a flattened copy of the image (Ctrl-Alt-S, Ctrl-Shift-S or File, Save As).

Both of the completed PSDs (Baby-Color-Paths.psd containing clipping layers, and Baby-Color-NoPaths.psd containing traditional raster layers) can be found on this month's CD set. ■

Selections

Those of you using selections, trace the outer perimeter of the hair and then subtract the face by Ctrl-Alt-clicking on the skin layer thumbnail in the Layers palette. Hold the Shift key down (or press the Add button in the Options palette) and draw a selection around the eyes to add them back in. Fill the resulting selection with the foreground colour.

TIP

If you use the Path Component Selection tool (A) — the solid black arrow — to select a path, its Boolean value (Add, Subtract, Intersect or Exclude) is displayed in the Options palette.



► Complete the hair path by closing it straight across the face.



► Creating paths for the foreground elements first, then subtracting them from the background elements, can save you a lot of time.

TREVOR MORRIS is a 2D/3D graphic artist and Web developer who specialises in Photoshop and Illustrator. He can be contacted at tmorris@fundy.net.

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POINTING DEVICE	Touch Pad	Touch Pad
CD-ROM/DVD	DVD	DVD
PORT REPLICATION	No	No
FIREWIRE	No	Yes
VIDEO RAM	16MB	16MB
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WARRANTY	1 Year	1 year
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WARRANTY	1 Year	1 Year
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PROCESSOR	PIII-1133MHz	PIII-1200MHz	P4 -1700MHz
RAM	256MB	256 MB	256MB
HARD DRIVE	20GB	40GB	40GB
SCREEN	14.1" XGA	14.1" XGA	14.1" XGA
CD-ROM/DVD	DVD	DVD-CDRW	DVD
PORT REPLICATOR	Optional	Optional	Optional
VIDEO RAM	16MB Int	16MB Int	16MB Int
56K v.90	Yes	Yes	Yes
10/100 LAN	Yes	Yes	Yes
WIRELESS LAN	Yes	Yes	Yes
WEIGHT	2.4Kg	2.4 Kg	2.4Kg
EXTRAS	IEEE1394 Port	IEEE1394 Port	IEEE1394 Port
WARRANTY	3 Years	3 Years	3 Years
Win XP PRO	(D9229)	(E3501)	(E3502)
	\$6,949	\$8,195	\$Call
Rent* /wk	\$60.29	\$71.10	\$Call

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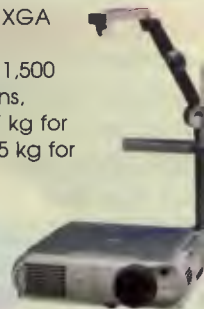
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TLP-680 (without camera)

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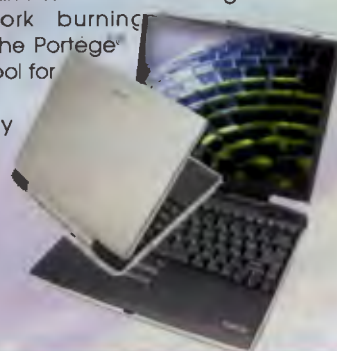
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PORT REPLICATOR	Optional
VIDEO RAM	16MB Ext
56k v.90	Yes
10/100 LAN	Yes
WIRELESS LAN	Yes
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WIN XP PRO	(D5873)
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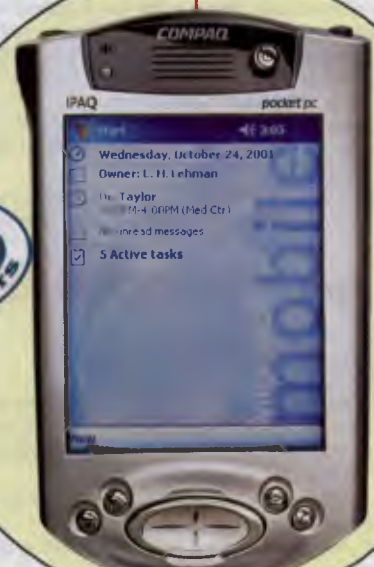
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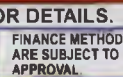
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Omnibook XE3L — a convenient, reliable notebook that comes with everything you need to do business and have a little fun, too. Top performance, Internet working, multimedia, and instant access to your favourite applications.

- Intel® Celeron 1.06Ghz
- 128MB RAM
- 14.1-inch XGA TFT
- 10 GB
- 24x CDROM
- Built-in 56K modem
- Built-in LAN
- Win XP Home / XP Pro
- 1-year warranty.
- Optional upgradeable warranty.

Superb
performance
and value

• with Windows XP



with
CD-ROM

Celeron
1.06Ghz

14.1
display

Windows XP Home



(E0982)

\$2,650

Rent* \$25.99/wk

Windows XP Professional



(E0983)

\$2,830

Rent* \$27.75/wk

Collect 5000 Bonus Fly Buys points when you purchase E0982, E0983 between 20/03/02 - 30/04/02

\$100 Cash Back**

****BUY** HP OmniBook Notebook and either a HP deskjet 350cdi printer, HP laserjet 1000 printer or HP Laserjet 1200 printer before April 30th 2002

****Full terms, conditions and claim form visit:** www.hp.com.au/HPPromotions/

Fast Delivery Australia-Wide

Omnibook XE3

XE3

XE3

XE3

PROCESSOR

PIII 1.13GHz

PIII 1.06GHz

PIII 1.13GHz

SD RAM

256Mb

256Mb

256Mb

HARD DRIVE

20GB

20 GB

30 GB

SCREEN

14.1" TFT

15" TFT

15" TFT

CD-ROM/DVD

DVD

DVD

CDRW / DVD

BATTERY

9-cell Lilon

9-cell Lilon

9-cell Lilon

Built-in 56K v9.0

56kbps Modem

56kbps Modem

56kbps Modem

Built-in LAN

10/100 LAN

10/100 LAN

10/100 LAN

WARRANTY

1 Year

1 Year

1 Year

WINDOWS XP HOME

(E1196)

(E1572)

(E1518)

Rent* w/k

\$3,793

\$37.20

\$4,399

\$41.11

\$4,799

\$44.85

WINDOWS XP PROFESSIONAL

(E1579)

(E1574)

(E1535)

Rent* w/k

\$3965

\$37.05

\$4,575

\$42.75

\$4,977

\$45.36

HP OmniBook XE3 PIII

Reliable
high performance
notebook



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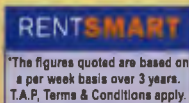
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Direct

www.ht.com.au/cat/hp

hp networks & servers

NEXT BUSINESS DAY ADVANCE REPLACEMENT - LIFETIME WARRANTY

PLEASE NOTE THAT PRICES ARE SUBJECT TO CHANGE ON ALL PRODUCTS

hp procure switch 2512 & 2524

9.6GB PS BACKPLANE & AUTO-MDIX • Lowest Price 10/100 Managed Switch • Provides a rich, layer 2 feature set • Includes 2 transceiver slots for upgrade to a gigabit • Auto MDIX on all 10/100 and 100/1000 ports • Lifetime warranty for as long as you own the product • Wire-speed performance on all ports • FREE HP TopTools Management Software included.



procure switch 2512

(12 port managed switch)
Rent* \$17.63/wk (A9703)

\$1,609

procure switch 2524

(24 port managed switch)
Rent* \$23.33/wk (B0062)

\$2,129

hp procure switch 2312 & 2324

Ideal for low-cost, unmanaged 10/100 connectivity • Lowest Price 10/100 Switch • Includes 2 Built-in Gigabit transceiver slots • Brings 10/100/1000 solutions to the market • Media-flexible ports for uplinks and server connections • HP quality, functionality and performance • Plug and play solution



procure switch 2312

(12 port unmanaged switch)
Rent* \$10.73/wk (B0063)

\$979

procure switch 2324

(24 port unmanaged switch)
Rent* \$15.22/wk (B0064)

\$1,389

hp netserver tc2100 Series

the server with the best price/performance value for small businesses

P4653A features:

Intel Pentium III 1.26GHz, 128MB SDRAM, 512KB L2 cache, 48x CD-ROM, 40GB IDE HDD, FDD, dual-channel UATA/33/66/100 IDE controller, 10/100TX LAN, 6 shelves, 5 PCI slots, tc2100 startup CD. Warranty : 3 Year Next Day, On-Site

P4653A hp server tc2100 PIII/1.26GHz 40GB IDE

Rent* \$22.54/wk (E1257)

\$2,299

P4652A Features:

Intel Pentium III 1.26GHz, 128MB SDRAM, 512KB L2 cache, 48x CD-ROM, 18GB SCSI HDD, FDD, single-channel Ultra 160 SCSI controller, 10/100TX LAN, 6 shelves, 5 PCI slots (4 available on SCSI model), tc2100 startup CD. Warranty : 3 Year Next Day, On-Site

P4652A hp server tc2100 PIII/1.26GHz 18GB SCSI

Rent* \$28.43/wk (E1258)

\$2,899

**NEW
features**



hp netserver tc3100 Series

Features:

Intel Pentium III 1.26GHz, 256 ECC SDRAM expandable 4 Gig, 512KB L2 Cache, 48x CD-ROM, FDD, 1.44 MB floppy drive, Integrated network Card NIC, Integrated dual-channel ultra 3 SCSI Controller, 8 shelves, 6 PCI slots, tc3100 startup CD.

Warranty : 3 Year Next Day, On-Site

P3506A TC3100 PIII-1.26GHZ SCSI 18GB Hard Drive

Rent* \$37.33/wk (E4241)

\$3,995

P7658A TC3100 PIII-1.26GHz SCSI 18GB Hard Drive HS (hot swap drives)

Includes: Dat 24i Tape Back-up unit pre-installed.

Rent* \$48.22/wk (E4242)

\$5,290

**NEW
netserver**



HP ProCurve Switch 408

Unmanaged 8 port 10/100 switch in a compact sized package. This switch offers half/full duplex, 10/100 autosensing on every port. Warranty: Lifetime, Exchange Next Day

(C9017)

\$388

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Direct

See Web Direct Link (at top of page) for more products and latest info!

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Web: www.ht.com.au

Fax: 1300 13 6666

Email: sales@ht.com.au

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at Kmart Broadway-Sydney

Quantum

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Direct

www.ht.com.au/cat/quantum

Simple, Robust and Cost-effective Network Storage

Snap Servers



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The figures quoted are based on a per week basis over 3 years. T.A.P. Terms & Conditions apply.

Quantum Snap Servers are the easy alternative to File Servers, for Windows PC's. Installed and working in around 5 minutes, means that you just plug in and start working with no downtime. Snap supports all standard network types including, NT, Novell and Linux simultaneously with no licence worries.



- Installs in minutes
- Less Maintenance
- Higher reliability
- the right capacity to suit your needs

Snap Server 1100 40GB & 80GB



- 40GB
Rent* \$17.08/wk
(E4199) **\$1,565**
- 80GB
Rent* \$23.48/wk
(E4200) **\$2,395**

Snap Server 4100 240GB & 400GB



- 240GB
Rent* \$72.00/wk
(A8119) **\$8,299**

Snap Server 2200 160GB



- 160GB
Rent* \$38.30/wk
(D1208) **\$4,099**

Snap Server 12000 960GB



- 400GB
Rent* \$94.41/wk
(D1207) **\$11,525**
- 960GB
(C9169) **\$38,195**

roxio

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New award winning roxio product range

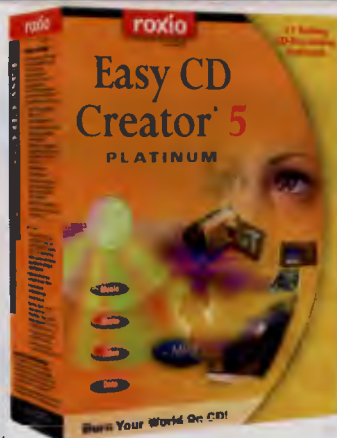
Easy CD Creator⁵ PLATINUM

(C0730)

\$125

Go beyond the software that came with your CD recorder with Easy CD Creator 5 Platinum the most complete and powerful CD burning software!

- MP3 support - burn MP3s to CD, create MP3s with MP3 encoder
- Use Spin Doctor to remove hisses, pops and clicks from old records and cassettes and convert them to digital CDs
- Add professional effects like fade-in, fade out and crossfade
- Design and print your own CD labels



GoBack³ DELUXE

(D3818)

\$95

GoBack Deluxe 3 delivers quick and easy system recovery, providing users with the power to undo PC problems and greatly reduce downtime and service calls.

- Restore a PC to working condition
- Recover deleted or overwritten files, even those emptied from the Recycle Bin.
- Return a hard drive to the way it was at any time in the recent past.



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for all your computer needs!

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ENTERTAINMENT
WEEKLY
Photo



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Iplex- Largest Australian PC maker!



With more than 18 successful years in the IT industry, Iplex is ranked in the top 20 IT companies and top 5 Desktop/Server manufacturers in Australia. Iplex offer systems to best suit your computing needs at a cost effective price.

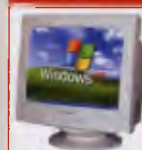
The Iplex M3 Series Slim Office Desktop is ideal for business and corporate environments. Housed in a small form factor Slim Office Case and featuring Integrated LAN, Graphics and Audio onboard.

Iplex PCs use genuine Microsoft® Windows® www.microsoft.com/piracy/howtotell

IPEX M3 SERIES DESKTOP

Form Factor	Slim Office	Micro Office*
Processor	Intel® Celeron® 1.1 GHz	Intel® Pentium4® 1.6 GHz
HDD	20 GB	20 GB
RAM	128 MB	128 MB DDR
LAN	Onboard	Onboard
Video	Onboard	32MB Integrated
Sound	Onboard	Onboard
CD-ROM	Yes	Yes
Modem	No	No
Monitor	15" CRT	15" CRT
Warranty	3 Years RTB	3 Years RTB
Win XP- Pro	Yes	Yes
Office XP SBE	Yes	Yes
Parts	(D9297)	(E1558)
	\$1,999	\$2,250
Rent*	\$21.91/wk	\$22.06/wk *Image not shown

IPEX MONITORS



IPEX CRT MONITORS

15"
(C5931)
\$315

17"
(D9301)
\$399

IPEX SOHO TOWER

Form Factor	T400 Tower	T400 Tower	T400 Tower
Processor	Intel® Pentium® 4 1.6 GHz	Intel® Pentium® 4 1.8 GHz	Intel® Pentium® 4 2.0 GHz
HDD	20 GB	20 GB	40 GB
RAM	128 MB SDRAM	128 MB DDR	256 MB RDRAM
LAN	Onboard	Onboard	Onboard
Video	Onboard	32MB	32MB
Sound	Onboard	SB Live	SB Live
CD-ROM	Yes	CDRW	DVD-ROM
Modem	56K Internal	None	56K Internal
Monitor	17" CRT	17" CRT	17" CRT
Warranty	3 Years RTB	3 Years RTB	3 Years RTB
OS	Win® XP Home	Win® XP Home	Win® XP Home
Works 6.0	Yes	Yes	Yes
Part #	(D9294)	(E1276)	(D4157)
	\$1,849	\$2,219	\$2,690
Rent*	\$20.26/wk	\$21.76/wk	\$26.38/wk



Iplex have a full range of Windows® XP ready PCs. Take advantage of Microsoft's new Operating system with a new PC from Iplex. Choose from Windows® XP Home or Professional Editions for home or business.



Upgrade your IPEX PC to the following software suites

Microsoft Works Suite 2002	(E4246) \$79
Microsoft Office XP SBE	(E4247) \$369

• Microsoft Works 6.0	• Encyclopedia Standard 2002
• Microsoft Word 2002 XP	• Microsoft Money 2002
• Microsoft Encarta	• Microsoft Picture It! Photo 2002
• Microsoft Word 2002	• Microsoft Outlook 2002
• Microsoft Excel 2002	• Microsoft Publisher 2002

IPEX LCD FLAT SCREEN MONITORS

IPEX 15" LCD

Monitor Part #	15" LCD (C9400)
	\$965
Rent*	\$10.57 /wk



IPEX 17" LCD

Monitor Part #	17" LCD (C9401)
	\$1,699
Rent*	\$18.62 /wk

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Next Generation Backup Solutions

media

DLT Tape Media IIIXT 15/30GB Tape (68362)	\$80
DLT Tape IV Media 20/80GB (71231)	\$155
DLT Cleaning Tapes (97851)	\$90
Super DLT Media 110/220 GB (B8825)	\$330
Exatape 112 - 8mm (C1976)	\$12
Exatape 160 - 8mm (C1980)	\$22
Exatape AME - 125m (C1986)	\$105
Exatape AME- 170m (77600)	\$170
Exatape AME 2-150m (C1989)	\$175
Exatape 8mm Cleaning Tape (C1982)	\$29
Exatape AME 18c Cleaning Tape (C1983)	\$35
Exabyte VXA1 - V6 12/24 GB (91103)	\$72
Exabyte VXA1 - V10 20/40 GB (C3945)	\$109
Exabyte VXA1 - V17 33/66 GB (91105)	\$189
Exabyte VXA1 - 1m Cleaning Tape (91104)	\$75
LTO Ultrium 100/200 GB Tape (D1500)	\$298

DLT & LTO TAPE DRIVES



DLT1 economy tape Internal Drives	(88037)	\$2,790
DLT1 economy tape External Drives	(88038)	\$3,340
DLT8000/S Internal 40/80GB	(82501)	\$5,815
DLT8000/ST External 40/80GB	(82502)	\$6,419
SDLT220/S Internal 110/220GB	(B9821)	\$10,529
SDLT220/ST External 110/220GB	(B9823)	\$11,245
LTO Ultrium Internal 100/200 GB	(D1509)	\$10,350
LTO Ultrium External 100/200 GB	(D1508)	\$10,995



iPrism Internet Filter Appliance

- Dedicated system filters internet traffic continuously
- Over 65 categories updated automatically every 24 Hrs.
- Limits legal liability of unauthorised site access
- Excellent for Schools, Corporates, Government.
- Plug and Play, no extra hardware needed.
- Helps restore network /internet bandwidth
- Increases employee productivity

50 user licence: (E3950) **\$10,805**

TapeWare

BACKUP SOFTWARE

Backup for NT, Network or Linux

TapeWare - Loaded with features yet simple to use. TapeWare is simple to install and easy to administer whether you have a single PC or a large enterprise network.

- Quick Start Wizards set up common applications quickly
- Advanced and predefined scheduling features
- Built in free 9 slot autoloader support
- Desktop, Single Server, Enterprise & Data Center Versions
- Options for MS-Exchange, Cluster, SQL, etc.

Tapeware Lite for Windows

Single Server Licence (E1612) **\$680**



- VXA -



EXABYTE VXA-1 TAPE DRIVE

- 12/24, 20/40, 33/66 Gbyte capacity tapes
- 3-6MB sec sustained, that's 21.6GB/Hr
- IDE, Firewire and LVD models available.
- Retrospect or Tapeware Bundles available.

VXA 1 TAPE DRIVE (Internal)	(C1847)	\$2,170
VXA 1 TAPE DRIVE (External)	(C1915)	\$2,495
VXA 1 TAPE DRIVE (External Firewire Kit)	(B1856)	\$2,980

EXABYTE MAMMOTH 1 TAPE DRIVE

Industry standard backup; External
20/40 Gb capacity: (E1609) **\$6,865**

EXABYTE MAMMOTH 2 TAPE DRIVE

High capacity and speed: External
60/150 Gb capacity: (E1610) **\$12,369**



*Super DLT and LTO models also available

DLT1 AUTOLOADER

- 400 GB native, 800 GB compressed capacity
- DLT1 Single Tape Drive included
- 10 tape capacity
- Overland DLT reliability
- LVD 68 pin SCSI interface
- Includes 1 data tape and cable
- 20 GB/Hr throughput.
- 3 year factory warranty
- Optional On-site warranty.

(A0476) **\$11,953**

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Power Back Up = Power Protection

APC Back-UPS ES 350/500



The new APC Back-UPS ES 350/500 is designed as an Affordable Battery Backup to provide continued uptime and hardware protection for home and home office computer users. This product has a five Australian style outlets (three battery and surge, two surge only outlets); new attractive flat design; phone, modem, fax and DSL data line surge protection; computer interface port for USB communications, ships with file saving, auto-shutdown software offers cord management feature. The core application for the APC Back-UPS ES is the standalone desktop in the home environment or home office in countries using Australian plug style.

New line of UPS family comes with 2 years product warranty..

Back-UPS ES 350va (E1093)

\$229

Back-UPS ES 500va (E0709)

\$295



350va

(C5446)

\$155

500va

(C5878)

\$220

650va

(56231)

\$279

APC SurgeArrest-PNote Pro[®]



Surge
Arrest 5 Strip
(A0098)

\$55

PNote Pro
(99592)

\$45

The SurgeArrest Notebook Pro Surge Protector provides the mobile notebook professional with advanced AC and telephone line protection. The unique, in-line design creates a compact, lightweight surge protector that is truly portable and appropriate for use in any country throughout the world. With built-in Excess Current Detection, the Notebook Pro warns you against potential modem damage. A Velcro mounting strap and 6 ft. telephone cord eliminate the need to carry any additional accessories.



An APC SurgeArrest is your guarantee that your hardware and valuable electronics are protected regardless of lightning strikes and everyday unexpected power surges. SurgeArrest also offers the best protection from line noise which can cause glitches and errors in electronic operations and computer data.



APC

Symmetra

Power Array

8kVA, exp. to

16kVA

(71087)

\$13,995

So good we
use it
ourselves!

APC Back UPS Pro[®] for Workstations

Smart battery backup & high performance surge suppression
for Windows 95 & NT PCs

- PowerChute[®] Plus software lets your UPS shut down your applications gracefully in the event of an extended power failure
- Additional outlet for protection of printers • Audible alarms • Phone/modem protection • User replaceable, hot swappable batteries

APC Back-UPS Pro 280si (76636) **\$259**

APC Back-UPS Pro 420si (76637) **\$349** APC Back-UPS Pro 650si (76638) **\$485**



APC Smart-UPS Rack Mounts[®] for Servers

Smart-UPS 700, 1000, and 1400 2U Rack Mounts

Network power protection to increase availability of your system. APC Smart-UPS 2U Rackmount features include longer runtime to keep your system safe and a 2U design to save your valuable rack space by 30%. Hot swapping batteries is also now faster and easier with the replacement battery chassis tray.

APC Smart-UPS 2u700VA (99595) **\$699**

APC Smart-UPS 2u1000VA (99596) **\$1,029**

APC Smart-UPS 2u1400VA (99597) **\$1,445**



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About...



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Make Movies at Home - Easy!

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VINTAGE
CELLARS

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for all your computer needs!



1. CONNECT

2. CREATE

3. SHARE

Maxtor®

Maxtor DV Producer™ is one of the easiest ways to turn your home videos into Hollywood-style movies. Regardless of your skill level, the flexible, easy-to-use software will let your creativity soar with artistic templates, realistic special effects, professional transitions and tiling, and multiple audio tracks. Everything you need is included in this kit: A. Maxtor FireWire™ (1394/i.LINK™) card, B. Camcorder cable, C. ArcSoft™ ShowBiz™ video editing software. Make spectacular movies in three easy steps:

Designed for beginning and advanced users. Windows® Compatible

FEATURES:

- Easy editing software • Add special effects • Easy installation • Complete kit

Now you're making movies like a professional!

FIREWIRE CARD

A.

CABLE

B.

SOFTWARE

C.

DV Producer

\$199^{RRP} (E4197)

Maxtor Personal Storage

Ask About...



- Extend to a total of 3 Years Return to Base
- Extend to a total of 5 Years Return to Base
- Upgrade Return to Base of Warranty Extension to On-Site

FireWire
FireWire
USB 2

Maxtor Personal Storage 3000DV 80GB

Maxtor External Storage 160GB

Maxtor Personal Storage 3000LE 40GB

Maxtor Personal Storage 3000DV/80GB
Ideal for speed-intensive applications such as editing digital video, playing games, and listening to music. The 3000DV features the Maxtor award-winning 7200 RPM hard drive—up to 56% faster than 5400RPM external hard drives.

80GB(E4068) **\$880**

Maxtor Personal Storage 3000XT/80GB/160GB
With the highest capacity maxtor offers, this is the perfect external storage solution for today's storage-hungry digital entertainment equipment. Run applications, edit videos, listen to music, download files, or play games, or store all your important documents and precious memories.

80GB(E4066) **\$735**

160GB(E4067) **\$985**

Maxtor Personal Storage 3000LE/40GB/120GB
Instantly add storage for your digital photos, videos, MP3 songs, games, and important electronic files. The USB 2.0 interface is up to 40 times faster than USB 1.1. The 3000LE is compatible with virtually all existing USB ports—offering connectivity for today's systems and speed for tomorrow's technology.

40GB(E4064) **\$489**

120GB(E4065) **\$749**

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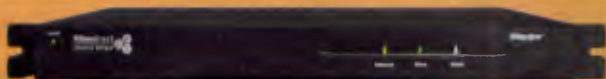
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Network storage you can use



MaxAttach NAS 4000 Storage Server

- Windows, UNIX/Linux, NetWare file sharing
- NAS Powered by Windows operating system
- RAID Levels 0,1, and 5 data protection
- ADS/NDS/NIS Support
- SCSI port for Back-up
- No per-client licence
- Up to 640GB in 1U
- NAS4000 Series has Gigabit Ethernet



The new MaxAttach NAS 4100 storage servers deliver seamless integration. With a Windows Powered operating system, the NAS 4000 series is network storage that you can manage with the tools you have now. From backup support, to device management, to directory services, the NAS 4000 series is the new network storage solution that you already know how to use.



- 640GB in 1U height
- PSM snapshot capability
- RAID 5, 1, and 0 data protection
- Active Directory support
- External SCSI port for local tape back-up
- Gigabit & dual 10/100 Ethernet ports
- Windows, UNIX/Linux, NetWare file sharing
- NAS Powered by Windows operating system

NAS 4100 320GB

(B9955)

\$8,854
Rent* \$75.59/wk

NAS 4300 400GB

(C9243)

\$9,949
Rent* \$84.94/wk

NAS 4300 480GB

(D9180)

\$10,995
Rent* \$93.88/wk

NEW

NAS 4300 640GB

(D1510)

\$13,746
Rent* \$112.61/wk

Windows platform enabled storage solutions

MaxAttach NAS 6000 Storage Server

NEW

- Highly scalable: 1.9TB to 5.7TB
- Redundant hot-swappable components for high system availability
- PSM snapshot software and hardware RAID for high data available
- 1 yr next-business day onsite service included, Lifetime 24x7 Technical Phone Support



Combining the proven interoperability of a Windows-based platform with scalability to 5.7TB, the MaxAttach NAS 6000 file server enables unprecedented storage solutions. Pre-configured and ready to install, the NAS 6000 includes PSM snapshot software and hardware RAID 5 for high data availability. Redundant components deliver high system availability. To further ensure high uptime, one year of next-business day onsite service is included, with 4-hour response upgrades available.

- All MaxAttach products include 24x7 phone technical support.
- Offering interoperability certified by leading software vendors, the NAS 6000 starts at a 1.9TB configuration.



**1.9Terabyte
Base Unit**

(D9177) **\$66,598**

**1.9Terabyte
Expansion Unit**

(D9179) **\$55,975**



**Fast
Delivery
Australia-
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Web
Direct
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for
more
products
and
latest
info!

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quoted are
based on a
per week
basis over 3
years. T.A.P.
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Web Direct

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Mobile phone, Internet, SMS and a Palm OS organiser all in one

treo \$1,395

(E3754) Keyboard version
(E3806) Graffiti version

The Handspring™ Treo™ is the first incredibly compact communicator that integrates a mobile phone, email, SMS and Internet browsing, and a Palm OS® organizer in one indispensable device. The Treo has everything you need to stay connected, organized and in-touch. Talk on the phone, check email, send a short message, browse the Web, and organize your life with only one device. And it's 100% Palm OS® compatible so you can run 11,000+ applications and transfer data with ease. The Treo comes in two versions: one with a built-in keyboard and one with Graffiti® handwriting software.

Your choice of built-in keyboard OR Graffiti® handwriting!!

Graffiti Version Pictured



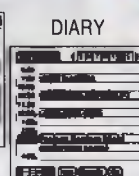
Keyboard Version Pictured



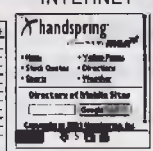
PHONE BOOK



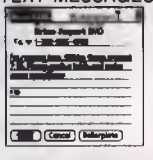
DIARY



INTERNET



TEXT MESSAGES



Handspring Treo

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SonicWall – Single Stop Security

In just one SonicWall firewall appliance, you get

- > ICSA-certified, stateful packet inspection firewall
- > IPsec VPN for remote access
- > IP address management features
- > Authentication capabilities
- > Network anti-virus
- > Content filtering
- > Reporting features
- > Redundancy options
- > Vulnerability scanning services and more

PLUS the new ASIC-Based processor gives you performance ten times faster at lower prices. Starting from the entry-level model @ 75 Mbps firewall throughput up to the gigabit multi interface model @ 1.67 Gbps firewall throughput, the SonicWall firewall range is a cost effective versatile solution for IT security managers.



PRO 200 unlimited users (D8159) **\$6,209**

Tele3 5 user (E0969) **\$1,095** SOHO3 50 user (E0971) **\$2,169** PRO 300 unlimited users (E0974) **\$8,224**

SOHO3 10 user (E0970) **\$1,095** PRO 100 unlimited users (E0576) **\$3,829** GX 2500/2500 (E0975) **\$26,955**

Web Direct

See Web Direct Link

(at top of page) for more products and latest info!

Not all items are in stock at all stores but can be ordered for Pick-up or Delivery*

HARRIS TECHNOLOGY

Delivery charges extra

APR

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HARRIS TECHNOLOGY

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.



FINANCE METHODS ARE SUBJECT TO APPROVAL.

World Leaders in GPS Systems

NEW



Benefon ESC!

Benefon Esc personal navigation phone is a revolutionary communication instrument you'll never get lost with. It guides you and shows all necessary information for getting from one place to another - no matter if you're in the wilds or in the city, inside or outside GSM coverage. Benefon Esc! is equipped with a GPS navigator, which can be uploaded with Australian maps.

*Rent: \$18.06/wk (E3702) **\$1,648**

Features:

- 12 channel GPS receiver
- Map upload facility
- Unique "find a friend" function to track and find other Benefon Esc! users
- Tracking capability to an external service center. Ideal for fleet tracking
- Emergency button - SOS messages with your location can be sent to a predefined number
- GSM900, GSM1800 & GSM900/1800 dual band networks
- Splash proof (IPX4) with stainless steel structure

NEW



Pocket PC GPS Clip-on

Turn your Compaq Pocket PC handheld into a powerful navigation tool that can pinpoint your position to within 10m on Australian street maps. Just attach the GPS clip-on onto the compact flash memory slot, and the receiver pinpoints your location.

Features:

- 12 Channel parallel channel receiver.
- Australian base map of main roads, highways, rivers, cities and suburbs.
- Compatible with most Windows CE software that access GPS
- Displays AMG/MGA, Lat/Long, Elevation, Trip, Speed, Heading, Waypoints, Routes and more
- Note-Compaq IPAQ is not included

*Rent: \$8.19/wk (E2325)

\$748



GPS MAP 330

Boasting the most memory in its class the Magellan MAP 330 is designed to meet the stringent navigation needs of the outdoor enthusiast. With a built in 8MB base map of Australian main roads, highways, waterways, cities and suburbs, the Map330 is the go anywhere GPS receiver.

Features:

- 8MB of Australian Basemap
- 8MB of Flash memory to upload detailed Australian Maps using the optional Mapsend Streets CD.
- Stores up to 20 routes, 500 waypoints and 1200 track points
- Hi-res greyscale display (103x160pixels)
- 5 easy to follow navigational screens
- 12 channel parallel quadrifilar antenna

*Rent: \$8.75/wk (C5893)

\$799

NEW

NEW



*Rent: \$9.81/wk (E3738)

\$895



*Rent: \$7.61/wk (E3732)

\$695

Meridian GPS, Meridian Gold GPS.

Meridian is the new premier Magellan line of rugged GPS hand-held receivers, designed with the serious navigator in mind, who demands a superior easy-to-use navigational tool. The Meridian base map includes highways, major cities and major waterways, whereas the Meridian Gold base map includes major roads, major highways, waterways, cities and suburbs.

Features:

- 2MB of Australian Base map (Meridian), or up to 16MB of Australian base map (Meridian Gold)
- Expandable memory capacity for downloading detailed Australian maps with optional SD memory cards in 8, 16, 32 or 64MB
- Stores up to 20 routes, 500 waypoints and 2,000 tracks.
- Large backlit display for easy map viewing
- Accessible push-buttons, easy to use and backlit for night time use
- Rugged rubber armouring and high impact plastic for use in the harshest environment
- Waterproof Per IEC-529 IPX7 specs.

GPS320 has a built in marine navais data base and a power / PC cable



*Rent: \$5.56/wk (B7508)

\$599



(B7506)

\$495

Magellan GPS 320 & 315

The GPS 320 & 315 will take you where you want to go. Its built-in database puts more than 15,000 cities, additionally the GPS 320 includes marine navais in the palm of your hand. Nine navigation screen's provide all the information you need on a high resolution, EL backlit display.

Features:

- Powerful 12 parallel-channel receiver
- Built in database of worldwide cities.
- 15hrs of continuous battery life on two AA batteries
- 1200 point SmartTrack records your path; BackTrack brings you home again.
- Store 500 waypoints.
- Weatherproof, compact and lightweight.

FLY BUYS 1,000 BONUS POINTS

Collect 1000 Bonus Fly Buys points when you purchase E3702, E2325, C5893, E3738 or E3732 between 20/03/02 - 30/04/02

RENTSMART

The figures quoted are based on a per week basis over 3 years. T.A.P, Terms & Conditions apply.

MapSend Streets

MAGELLAN

WITH THE ALL NEW MAP

MapSend™ Streets & Destinations

Australia

Detailed Street Maps for the Magellan Map 330, Meridian Gold, Meridian

CD-ROM

NSW & ACT (C7662)

\$147

Also available for other states

Mapsend Streets for Magellan Map 330 and Meridian Series
Magellan's Mapsend Streets Australia software provides authorised Australian street level data to be uploaded to your Map330 or Meridian to compliment the preloaded road and highway data. Mapsend streets is available on 7 different state based CD's.



Fast Delivery Australia-Wide

APR

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NETGEAR™

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Web
Direct

www.ht.com.au/cat/netgear

Everybody's Connecting

Modular Solutions

New Business
Solutions

Network Cards

FA 311
Ethernet
Adapter
10/100 PCI
(A1372)
\$42

FA 312
10/100
Wake on Lan
Ethernet
Adapter
(A1373)
\$45

FA 411
10/100
Mbps PC Card
(No dongle
required)
\$129



FA511
10/100
CardBus PC
Card
(No dongle
required)
(D4112)
\$139



GA 302T
32 bit PCI
Gigabit
network card
(D4118)
\$175

GA 622T
32/64 bit PCI
Gigabit
network card
(B9943)
\$355

Connect with copper or fibre gigabit. Link up to high-speed servers, connect switches, and combine fibre and copper networks. Two module bays on NETGEAR's FS700 series Modular Fast Ethernet Switches give you extraordinary upgrade flexibility. These non-blocking 19" units provide 24 or 48 10/100 Mbps, auto-sensing ports with Auto Uplink™ support.

FS726 24 Port 10/100, 2 Module slots



(D0873)

\$1,420
Rent* \$15.56/wk

FS750 48 Port 10/100, 2 Module slots



(D0874)

\$2,410
Rent* \$23.63/wk



AG711T
Copper module

(D0921)

\$675
Rent* \$7.39/wk



AG711F
Fibre module

(D0924)

\$940
Rent* \$10.30/wk

Managed Solutions

NETGEAR's Layer 2 non-blocking managed switches boost small business networks with 24 10/100 ports, 2 stacking ports, and 2 gigabit ports - use built-in Copper Gigabit or GBIC slots. Management includes SNMP, RMON, VLAN, QoS, port trunking, Spanning Tree, and port mirroring. All ports are auto-negotiating and support Auto Uplink™ technology.



FSM 726S - Managed 24 port
10/100 switch with 2 stacking ports
and 2x Gigabit ports
(D8885)

\$2,150
Rent* \$23.56/wk

Gigabit Solutions

These high performance Gigabit switches provides either fibre or copper backbone connectivity for power workgroups, data centres and server farms. No additional modules are required - each product is ready to install straight from the box.

GS 508T
8 port 10/100/1000
Gigabit switch
(B9916)

\$2,829
Rent* \$27.74/wk

GS524T 24 port
10/100/1000 Mbps
Gigabit Switch
(D5961)

\$5,110
Rent* \$46.57/wk

FS 518T 2 port 100/1000
with 16 ports 10/100
(A1374)

\$2,135
Rent* \$23.40/wk

GS516T 16 port
10/100/1000 Mbps Gigabit
Switch.
(D5960)

\$3,880
Rent* \$36.26/wk

FS 309T 8 10/100 ports
1Gig Uplink
(D8887)

\$619
Rent* \$6.78/wk

FS 517TS 1 port
100/1000 and 16 port 10/100
stackable switch (copper)
(C2299)

\$1,640
Rent* \$17.97/wk



GS524T

Switches

FS 105



FS 105 5 port 10/100
auto-sensing switch (84722) **\$149**

FS 108 8 port 10/100
auto-sensing switch (70905) **\$249**

FS 116 16 port 10/100
auto-sensing switch (A5347) **\$499**

FS 516 16 port 10/100 auto-sensing
and internal PSU/Vista (60522) **\$765**
Rent* \$8.38/wk

FS 524 24 port 10/100 auto-
sensing switch (77549) **\$895**
Rent* \$9.81/wk

FS 524S 24 port 10/100 auto-sensing
switch - stackable (B6540) **\$1,589**
Rent* \$17.41/wk

FS 524



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NETGEAR™

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Wireless Networking & Routers



Wireless

The NETGEAR wireless family means that you never have to be tied down by your cabling again. Whether you are looking to add to your wired Ethernet network or set up a new network these standards based 802.11b products allow you to share network resources without the need for cabling. These plug and play devices are easy to install are WiFi certified and come with WEP encryption.

Ask about NETGEAR 802.11a Products

Did you know ?
A small peer to peer
wireless network does
not need an access
point!



MR 314

Cable/DSL router with
integrated 4 port 10/100
switch & built in access point

(C5223) **\$595**
Rent* \$6.51/wk



ME102 Wireless Access Point

(B9929) **\$619**
Rent* \$6.78/wk



MA301 PCI Adapter cradle

(B9927) **\$98**



MA 101 Wireless USB Adapter

(C7110) **\$315**



MA401 PCMCIA Adapter

(C8117) **\$215**

Routers

NETGEAR have a comprehensive range of Cable/DSL routers. All products offer standard shared internet access with NAT Firewall security and easy installation via web based configuration and DHCP. The products are plug and play and ideal for connection to either Cable/DSL or satellite broadband services. www.netgear.com.au offers specific installation information on both Telstra and Optus services.

RT 311 Cable/DSL router with 1 10/100 port

(97719) **\$299**



RT 314 Cable/DSL router with integrated 4 port 10/100 switch

(A8862) **\$389**



RP114 Cable/DSL router with integrated 4 port 10/100 switch and ability to control web content

(C5592) **\$375**

R0318 Cable/DSL Security router with integrated 8 port 10/100 switch

(C4896) **\$509**

FR318 Cable/DSL firewall router with integrated 8 port 10/100 switch upgrade to vpn end point

(D1526) **\$748**
Rent* \$8.19/wk

FV318 Cable/DSL VPN Router includes 5 VPN end points, firewall and integrated 8 port 10/100 switch

(C2298) **\$1,663**
Rent* \$18.22/wk

Ask About

Netgear

10 Mbps
hubs.

Printer Servers

The
NETGEAR
print servers
enable you
to connect
your printers
to a network
for sharing
amongst
multiple PC's.



PS 110

10/100
Mbps Print
Server, 2
parallel
ports
(67226)
\$259

PS 113

10/100
Mbps Print
Server, 3
parallel
ports
(A3287)
\$395

RENTSMART

The figures
quoted are
based on a
per week
basis over 3
years. T.A.P.
Terms &
Conditions
apply.

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Sales: 1300 13 9999

Fax: 1300 13 6666

Web: www.ht.com.au

Email: sales@ht.com.au



See Page 2
for Locations

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Not all items are in stock at all stores but can be ordered for Pick-up or Delivery*
*Delivery charges extra

Prices are subject to change. Check here for latest prices & products!!

Web Direct

www.ht.com.au/cat/belkin

Belkin Surge & UPS

UPS SERIES

Regulator PRO Silver Series



Features:

- 2 Year Unlimited Product Warranty
- 175 Joule Energy Rating
- 3 Battery Back Up/Surge Sockets
- 1 Surge Protection Only Socket
- Power Management Software Included
- 1.8m Power Cord
- Telephone/Fax/Modem and UTP
- (RJ45) Protection
- 1.83m Telephone Cable
- RS-232 Communication Cable
- EMV/RFI Filtration

350VA	500VA	650VA
F6C350zSER-SB (192 Watts)	F6C500zSER-SB (300 Watts)	F6C650zSER-SB (360Watts)
(C9277)	(C9278)	(C9279)
\$189	\$249	\$329

Surge control is important because even small surges or spikes can eventually destroy or affect the performance of expensive electronic equipment such as a computer, phone, fax, TV, VCR, stereo or microwave. Damage can occur either instantaneously or over time as smaller surges cause the gradual deterioration of internal circuitry, to voltage fluctuations.

No Hassle Warranties Belkin offer the best Connected Equipment warranties in the business. Full warranty protection means your equipment is insured against damage due to power disturbances of all kinds - surges, spikes, even lightning strikes.

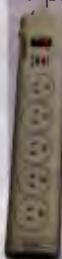
Connected Equipment Warranties up to \$25,000.

Connected Equipment Warranty up to \$50,000.

Connected Equipment Warranties up to \$80,000.

Home Office Range

F5C205z4



Belkin's SurgeMaster line has been designed to protect entry-level computers, dot matrix printers, personal copiers and all other sensitive electronics in the home or office. Telephone/fax/modem protection

5 socket's

27,000 Amps of AC protection

(C4603) **\$79**

Superior Grade

F5C206z2



Pentium III computers, audio/video equipment and office equipment need extra protection.

- 6-way Superior Grade range

AC Line protection

Blocked space adapters

(C4604) **\$105**

Maximum Grade

F5C208z2



Maximum Grade series ideal for protecting commercial business computers, ADSI and cable modems, high-end printers and copiers, and sensitive audio/video equipment such as satellite receivers and home cinema systems.

8 socket's
39,000 Amps of AC protection

(C4607)

\$135

PDA ACCESSORIES



Belkin PDA Portable Keyboard Palm 3/5/7 (D5946) **\$159**

F5U109 USB PDA Adapter (B6768) **\$59**



Belkin 4-in-1 Stylus Pen (C4694) **\$35**

USB 4 Port Economy HUB

F5U021-AUS

Add four USB peripherals to your PC and save your precious desktop space without adding clutter. Get Plug-and Play convenience as you add USB printers, scanners, and hard drives.



(D5950) **\$45**

Single Surge Cube

F5C195z

(D5966) **\$25**

The SurgeCube™ allows one electronic device to be protected from over voltages. It's ideal for laptops on business or personal trips, or for surge protection in a small space.



F5C195zTEL

The Belkin MasterCube™ protects one electronic device and one phone line from over voltages. Perfect for use with laptops on business or personal trips.

(D5956) **\$35**

USB Media Readers

F5U141

F5U140

F5U143

The Belkin USB Reader / Writer for SmartMedia CompactFlash I and II, and Multimedia & Secure Digital lets you drag and drop files, images, and music for editing and storage to your PC from your mobile phone, handheld computer, MP3 player or digital camera. Offers Plug & Play, Hot Swap Convenience. Up to 40 times faster than a serial port. Lifetime Warranty & 1800 Technical Support.

USB VideoBus II

F5U208

You create the show yourself with your PC & camcorder merged into a desktop video studio by the Belkin USB VideoBus II. The Belkin USB VideoBus II, complete with MGI VideoWave III SE software, gives your PC the power to make stunning movies & more!



(B4412) **\$145**

USB Pocket Hub

F5U007-UNV-AUS

The Belkin Pocket Hub allows you to instantly connect USB devices such as printers, scanners, external mice and keyboards, joysticks, digital cameras, or other USB hubs without having to restart your computer.



(C4577) **\$65**

F5U140

CompactFlash I and II (E3833) **\$69**

F5U14

SmartMedia (E3835) **\$69**

F5U143

Multimedia & Secure Digital (E3836) **\$69**

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Web
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Belkin Networking Solutions

ETHERNET NETWORK



Internet

Phone Line

Cable Line

Cable/DSL
Modem



F5D5230z4
4 Port Cable/DSL Gateway Router
(D5943) **\$349**

OR

F5D6230z3

Wireless Router (3 Port)
(D8219) **\$579**

Up to 3
Additional
PC's

F5D5000
Desktop Network PCI Card
(C5581) **\$29**

F5D5130z5
5 Port Network Switch 10/100
(D4192) **\$134**

Notebook or CardBus Network Card
F5D5020
10/100Mbps PCMCIA NIC - 16 Bit
(C5583) **\$89**
and F5D5010
10/100Mbps CardBus NIC - 32 Bit
(C5582) **\$99**

WIRELESS NETWORK

Desktop

F5D6050z
USB Wireless
Adapter
(D8216) **\$229**

Wireless Desktop
Network Adapter-
F5D6000z
PCI Adapter
(D8211) **\$90**

Desktop

F5D6130z
Wireless Network
Access Point
(D8217) **\$495**

Laptop

Wireless Notebook
Network- F5D6020z
Wireless PCMCIA (D8213) **\$229**

	CAT5 Network Cable
	USB Cable
	Cable Line
	Phone Line
	Wireless Link

Cables are not included in prices



Collect
1000 Bonus
Fly Buys
points
when you
purchase
D8216,
D8211,
D8217,
D8213,
D8219,
between
20/03/02 -
30/04/02



F8Q1000
USB IPAC
Sync
Charger
(D5952) **\$37**



F3L900-0
7-ICE-S
Size: 38.11cm
x 27.95cm x
10.16cm

*FREE cable
comes bundled
with this part,
available while
stocks last
Stone
Street
notebook
bag
(D5951) **\$69**

Belkin - KVM Switches

KVM ESeries

F1DB102P

Economy-
2 Port KVM Switch - P/S 2



(D3162) **\$84**

F1DB104P

Economy-
4 Port KVM Switch - P/S 2



(D3159) **\$175**

KVM SoHo Range (Keyboard, Video, Mice & Sound Switching)

F1DS102P SoHo

2 Port KVM Switch - P/S 2



(D3163) **\$289**

F1DS104P SoHo

4 Port KVM Switch - P/S 2



(D3166) **\$369**

F1DS102T SoHo

2 Port KVM Switch - P/S 2 & USB

(D3165) **\$299**

F1DS104T SoHo

4 Port KVM Switch - P/S 2 & USB

(D3167) **\$385**

Don't forget to include your Belkin All-In-One cables The easiest & neatest way to connect all your computers and servers to your PS/2 & USB KVM switches, providing image clarity for high-resolution applications.

PRICING AND SPECIFICATIONS MAY CHANGE. PLEASE REFER TO PAGE 2 FOR DETAILS.

Sales: 1300 13 9999

Fax: 1300 13 6666

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Order on-line

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Small-Medium Business Networks

ADSL Modem /Router

DSL-504 ADSL Router with 4 port 10/100 Switch
Connect single or multiple PC's
on an Ethernet LAN to an ADSL (C7593) **\$629**

DSL-300 Ethernet ADSL Modem
Connect single or multiple PC's on an
Ethernet LAN to an ADSL (B7198) **\$399**

DSL-100D Internal PCI ADSL Modem
Compatible for Windows based PC's to
connect via G.lite or G.dmt (B7196) **\$229**

DSL-200
USB ADSL Modem.
Plug and Play USB
interface with the host
PC through a USB port

(B7197) **\$299**

DSL-500 ADSL Router Connect single
or multiple PC's on an Ethernet
LAN to an ADSL (D0801) **\$435**



Web
Direct

See
Web
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Link
(at top of page)
for
more
products
and
latest
info!

For all your
small to
medium
business
and home
network
needs
please call
for more
information
and
pricing.
We have
an
extensive
range of
fantastic
D-Link
products
on our
database.

IP Router for ADSL/Cable Modem

DI-804
IP Router for DSL and Cable
Modems with 4-port 10/100Mbps
Switch.

Bigpond
Cable Login
Built-In

Special Price

(C2361)
\$269

DI-713P 11 Mbps Wireless IP Router for x DSL
and Cable modems with 3-port 10/100M
switch and print server (C7596) **\$745**

DI-701 10/100 IP Router
for xDSL and Cable Modems.
Internet ready. (98249) **\$285**



10/100 Switches

DES-1024R+ 24-Port 10/100 Mbs Fast
Ethernet Switch, Optional 2-Port 100 Base
FX Fiber (DES-102F) (E3669)

\$849

DES-1005D 5 Port 10/100Mbps
Fast Ethernet Switch with 5 x N-Way
UTP Ports. Palm Size (85101)

\$149

DES-1008D 8 Port 10/100Mbps Fast
Ethernet Switch with 8 x N-Way
UTP Ports. Palm Size (98254)

\$239

DES-1016R+ 16 Port 10/100 Mbs Fast
Switch, Optional 2-Port 100 Base FX Fiber
(DES-102F) (D4164) **\$699**

DES-1032 32 Port 10/100Mbps Fast Ethernet
Unmanaged Switch with 32 N-Way UTP Ports.
Rackmount Size (B7165) **\$1,299**



Gigabit Solution

DES-1009G
Gigabit ethernet Switch 8 Port 10/100Mbps
Unmanaged Switch with 1 Port 1000Base T
Gigabit (Copper) (D1196)

Copper
Gigabit

\$494

DGE-500T 32-Bit PCI Bus
Copper (RJ45) Gigabit
Ethernet adapter

Special Price

(E2058) **\$87**

DES-1226R 24-Port
10100Mbps Fast Ethernet
Unmanaged Switch with Option
Slot or 2-Port Gigabit Module

Special Price

(B7168) **\$879**

DES-1218R Gigabit Ethernet
Switch Unmanaged - 16 Port 10
100Mbps with Optional 2 x 1000
Base T Ports (DES122T)

Special Price

(B7166) **\$659**



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Home Networking

Wireless Solutions

DWL-1500

D-Link Air 11 Mbps Wireless LAN Indoor Bridge with POE Ethernet to Wireless LAN multipoint Bridge or Access Point. Built in Power over Ethernet.

(D9147) **\$659**

DWL-905 Wireless LAN Starter Kit. 2x DWL-650 & 1x DWL-1000AP

(C0713) **\$990**

DWL-650 11 Mbps Wireless LAN PCMCIA Card

(A9247) **\$245**

DWL-520 11 Mbps Wireless LAN PCI Adapter

New Product

(D9148) **\$295**

DWL-1000AP 11Mbps Wireless LAN Access Point

(A9251) **\$584**



HARRIS TECHNOLOGY
for all your computer needs!

Ethernet Networking

DCS-1000

The DCS-1000 Internet Camera is a stand alone system connecting directly to an Ethernet or Fast Ethernet network.

(E3900) **\$999RRP**

DSS-5+ 5 Port 10/100 Mps Dual Speed Switch

(89269) **\$169**

DSS-8+ 8 Port 10/100 Mps Dual Speed Switch

(C2935) **\$289**

DFE-910 Performance Network Kit 2 x 10/100 MB PCI Network adapters

(88060) **\$275**

DFE-530TX+ PCI-bus10/100M Fast Ethernet Network Interface Card

(88046) **\$42**

DSS-16+ 16 Port 10/100 Mps Dual Speed Switch

(D1525) **\$528**



USB Peripherals

DMP-HD610

MP3 jukebox Player (hard drive-based MP3 player.) The equivalent of over 250 CDs with large storage capacity of 10GB. Supports data speed up to 12Mbps for quick downloading music files via USB interface. large LCD screen (128x68 Pixels). Provides 8 hours of music playback with rechargeable Lithium battery.

(E3904) **\$799RRP**

DSB-500 2 Port USB PCI Adapter, provides PC with ability to connect USB devices

(D0984) **\$45**

DU-H4 4 USB Type A ports for Downstream connection to 4 USB devices, 1 USB Type B port for Upstream

(79131) **\$69**

DSC-100 USB Digital Camera.

Multi-purpose 100k digital camera, record up to 100 still images or 50 seconds of Video.

Max Resolution of 352 x 288

(D0985) **\$137**

DSC-350 Dual mode Digital Still camera, USB Multi-purpose 350k Digital Camera. Records up to 500 still images or 4.5 minutes of video.

Max. RES 1024 x 768

(B3268) **\$279**



KVM Switches

DKVM-08LB

8 Port Keyboard-Video-Mouse Switch with Keyboard, Mouse & 15 "TFT LCD Screen", Connects up to 8 CPU's. Up to 8 DKVM-08LB can be cascaded supporting 64 CPU's. 19" Rackmount.

(D9145) **\$4,052**

DKVM-2

2 Port Keyboard-Video-Mouse Switch. Connect up to 2 CPU's to one Keyboard, Video & Mouse.

(C7576) **\$169**

DKVM-4

4 Port Keyboard-Video-Mouse Switch. Connect up to 4 CPU's to one Keyboard, Video & Mouse

(C7604) **\$340**

DKVM-8

8 Port Keyboard-Video-Mouse Switch. Connect up to 8 CPU's to one keyboard, Video & Mouse

(B2656) **\$849**



New Product

Ask
About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site



Digital Memory & Readers

Ask About...



Verbatim

Slim-line PC Card CD-ROM Drive

"Add a CD-ROM to your Laptop!"



This 24x CD-ROM drive will connect to any PC Card enabled PC or Notebook & is ideal for mobile computing.

(97766) **\$299**

DVD8X

• PC Card Portable
8x DVD-ROM drive
(B2931) **\$605**

CDRW4X

• PC Card Portable
4x4x20 CD-RW drive
(C7205) **\$489**

PCI Cards

Add super fast serial and parallel ports. Interfaces to any PCI equipped PC.

(90688)

Priced from \$60



PRETEC CompactFlash



With CompactFlash Digital Film you can increase the storage capacity of any compatible digital camera or PDA.

16MB CompactFlash	(B2920)	\$45
32MB CompactFlash	(B2921)	\$62
64MB CompactFlash	(B2922)	\$99
96MB CompactFlash	(D9286)	\$143
128MB CompactFlash	(B2923)	\$175
256MB CompactFlash	(C0777)	\$352
512MB CompactFlash	(E1225)	\$879

new

PRETEC SmartMedia



SmartMedia cards expand the storage capacity of any compatible digital camera. Suitable for digital cameras from Olympus, Fuji and others.

16MB SmartMedia	(B2915)	\$29
32MB SmartMedia	(B2916)	\$49
64MB SmartMedia	(B2917)	\$93
128MB SmartMedia	(C3680)	\$187

PRETEC MultiMedia Cards



MultiMediaCard is the world's smallest removable flash storage card! Suitable for MP3 players, Mobile phones and Digital Video Cameras.

16MB MultiMediaCard	(B9871)	\$59
32MB MultiMediaCard	(B9873)	\$88
64MB MultiMediaCard	(B9878)	\$153

PRETEC Secure Digital Cards



Secure Digital media features faster data transfer rates and the ability to manually write-protect data.

16MB SecureDigital	(D4115)	\$68
32MB SecureDigital	(D4116)	\$108
64MB SecureDigital	(D4117)	\$175
128MB SecureDigital	new (D5918)	\$352

Memory Card Adapters

SDMCA PC Card 4-in-1 Card Adapter
(D4139) **\$119**



CFCA PC Card CompactFlash Card Adapter
(C2422) **\$22**

CFCAP PC Card Compact Flash+ Card Adapter
(D4147) **\$33**

SMCA PC Card SmartMedia Card Adapter
(B2918) **\$99**

4-in-1 Readers

4-in-1 readers have a unique single socket which will take Secure Digital Card, MultiMediaCard, Memory Stick and SmartMedia.

USB Digital Memory Readers

Exchange data between your PC, laptop, MP3 player or Digital Camera.



UISDMC1 USB 4-in-1 Socket + Compact Flash Card Drive
(D4155) **\$164**

UISC3 USB SmartMedia and CompactFlash Card Drive
(B2926) **\$85**

FireWire Digital Memory Readers



POCFFW FireWire CompactFlash Card Drive	(D4161)	\$105
POSFW FireWire SmartMedia Card Drive	(D4162)	\$127
MIMKFW FireWire Memory Stick Card Drive	(D4163)	\$138

APR 30

Verbatim

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Verbatim

BONUS
FREE* CD's
16x only
*refer to side panel for redemption details

100
FREE* DISCS

CopySmart CD Copiers

Copy discs with a single button press.
Standalone - no PC required.

Available with 1, 3 or 7 recording drives

CopySmart 16x* (B9843) **\$1,320**
Rent* \$14.46/wk

NEW CopySmart Plus 1-3 24x (E3503) **\$2,167**

NEW CopySmart Plus 1-7 24x (E3504) **\$4,232**

KOUWELL



PCI Firewire Cards

Connect your digital video camera to your PC. Download and edit your own movies.



PCI Firewire Card - 4 ports	(90689)	\$88
PCI Firewire Card - 6 ports	(A5161)	\$119
PCI Firewire Repeater Card - 5 port	(A5162)	\$98
PCI Firewire Repeater - 6 port	(A5163)	\$154
PCI Firewire Repeater - 10 port	(A5164)	\$198
6 pin to 6 pin Firewire cable	(B2905)	\$13

KOUWELL



USB Hubs & Cards



USB Hub - 6 ports	(79702)	\$65
PCI USB Card - 2 ports	(84801)	\$29
USB Network Cable	(B2908)	\$60
USB to Printer Cable	(84803)	\$33
Internal 3.5" USB Hub - 4 ports	(B2909)	\$49
USB to 10/100 Ethernet Adapter	(B2912)	\$88

KOUWELL



PCI SCSI Cards



NEW
160MB
Card

The easy way to expand your PC. Connect multiple SCSI devices to one card.

PCI Bus, Ultra-SCSI	(90681)	\$69
PCI Bus, Ultra-Wide	(90683)	\$154
PCI Bus, 2 channel Ultra-Wide	(90684)	\$340
PCI Bus, Ultra2-Wide	(90685)	\$245
PCI Bus, Ultra 160	(B9847)	\$438

KOUWELL



IDE Acceleration & Expansion Card

Speed up your PC's new hard disk drives with this PCI plug in Ultra DMA 100 card. Supports transfer speeds of up to 100MB/s with new ATA100 drives, and includes the ability to run up to 4 extra IDE or ATAPI drives on your system.



PCI IDE Ultra DMA 100 Card	(90688)	\$60
PCI IDE Ultra DMA 100 RAID Card	(B8410)	\$88

*ON REDEMPTION

Bonus CD's sent after registration of goods: registration form in boxes.
Only available while stocks last.

FireWire for Notebook



Adds two FireWire ports to your Notebook with a Cardbus Type II interface.

- Plug and Play!
- Free video capture and editing software.

FireWire to CardBus controller (2 port)

(B9849)
\$109

USB 2.0



Introducing USB 2.0. Faster than FireWire. Compatible with existing USB peripherals.

5 port Card (B9850)

\$105

4 port Hub (B9851)

\$109

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Fax: 1300 13 6666

Web: www.ht.com.au
Email: sales@ht.com.au

HARRIS Technology Centre
at Kmart Broadway-Sydney

APR
31

CD / DVD Production Equipment

PRIMERA
TECHNOLOGY INC.

Signature IV CD Printer



- 1200x1200 dpi res
- Fast: 27 seconds per disc.

(B9917) **\$3,298**

Rent* \$32.34/wk

See page 33
for Inkjet Printable Discs

PRIMERA
TECHNOLOGY INC.

Signature Pro CD Printer



- 2400dpi
- Superfast
- Dual Ink Cartridges

(C3681) **\$4,069**

Rent* \$38.02/wk

See page 33
for Inkjet Printable Discs

PRIMERA
TECHNOLOGY INC.

Inscripta Printer



- 610 x 305 dpi Thermal
- Durable finish

(B2932) **\$5,999**

Rent* \$54.68/wk

See page 33
for Thermal Printable Discs

PRIMERA
TECHNOLOGY INC.

Composer


**NOW
24x**

Premastering software Included
- optional inkjet printer shown

1 x CD-R

Composer CD-R 24x, 50 disc

(D5895) **\$5,435** Rent* \$49.54/wk

1 x DVD-R

Composer DVD-R 2x/8x, 50 disc

(C5561) **\$8,359** Rent* \$72.53/wk

2 x CD-R

ComposerPro CD-R 24x, 100 disc

(D5896) **\$8,375** Rent* \$72.66/wk

2 x DVD-R

ComposerPro DVD-R 2x/8x, 100 disc

(D4190) **\$13,095** Rent* \$107.27/wk

Add a printer from those shown at left and an adapter plate to upgrade your Composer / ComposerPro to a full burn and print solution.



Printer Stand for
Inscripta Printer

(B8878) **\$99**

Printer Stand for
Signature III/IV/Pro Printer

(C1748) **\$99**

Buzzsaw Network Burning Software

This unique software allows your Composer/ ComposerPro to be networked in an office so that anyone can start up and monitor recording and printing jobs.

(D0538) **\$2,299**



Desktop Series

RIMAGE*
**NEW
RANGE**

Premastering network
software included.
Software developers
kit also included.



Printer included
as standard

1 x CD-R

Desktop 800 24x, 60 Disc

(D4141) **\$10,050** Rent* \$85.81/wk

1 x DVD-R

Desktop 800 2x/8x, 60 Disc

(D4148) **\$11,854** Rent* \$97.11/wk

2 x CD-R

Desktop 1000 24x, 50 disc

(D4143) **\$17,110** Rent* \$138.19/wk

Desktop 4000 24x, 50 disc
(optional 110 disc)

(D4144) **\$20,820** Rent* \$168.16/wk

2 x DVD-R

Desktop 1000 2x/8x, 50 disc

(D4151) **\$20,409** Rent* \$164.84/wk

Desktop 4000 2x/8x, 50 disc
(optional 110 disc)

(D4152) **\$23,707** Rent* \$191.47/wk

4 x CD-R

Desktop 4000 24x, 50 disc

(D4145) **\$22,264** Rent* \$179.82/wk

4 x DVD-R

Desktop 4000 2x/8x, 50 disc

(D4154) **\$28,036** Rent* \$226.44/wk

APR
32

CD-R/CD-RW & DVD-R/DVD-RW: Storage for life

DataLifePlus CD-R - 24x



super
AZO

80 Min.
700MB
1x - 24x
10 Pack

(D4114) **\$13**

80 Min.
1x - 24x Singles
(D5933) **\$2**

DataLifePlus CD-R Audio



metal
AZO

80 Min.
10 pack

(C7889) **\$18**

80 Min.
Singles
(D0011) **\$3**

Pocket Colours 8cm CD-R



NEW

21min 185MB
1x - 16x, 5 Pack
(D9192) **\$9**

21min 185MB
1x - 16x, 10 Pack
(C9459) **\$18**

DataLifePlus Colours CD-R



super
AZO

80 Min. 700MB 1x - 24x
coloured CD-R's
in a 25 pack

(B1355) **\$33**

80 Min. 700MB 1x - 24x
coloured CD-R's
in a 10 pack
(D9227) **\$13**

Printable CD-R Media In Spindles of 50



Inkjet Printable 74 min 12x

(93471) **\$57**

White Thermal Printable
74 min 12x

(D5963) **\$57**

Silver Thermal Printable
80 min 16x

(D0562) **\$57**

DataLife CD-R

- Third generation Phthalocyanine Recording Dye Technology
- Scratch Resistant Surface



80 Minute DataLife SlimCase
10 pack 16x

(C7091) **\$12**

80 Minute DataLife Spindle
25 pack 16x

(C7093) **\$27**

DataLifePlus DVD Media



4.7 GB DVD-R for
General Data Singles

(C8840) **\$19**

4.7 GB DVD-RW

(C8841) **\$26**

4.7 GB DVD+RW

(D9166) **\$26**

DataLifePlus CD-RW

700MB CD Rewritable 2x-4x
5 Pack Colours

(D9230) **\$13**



2x - 4x Singles

(77492) **\$2**

4x - 10x Singles

(B2658) **\$3**

Verbatim Digital Media

CompactFlash



16MB (C8984) **\$45**

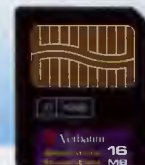
32MB (C8986) **\$62**

64MB (C8987) **\$99**

128MB (D0020) **\$175**

256MB (D9232) **\$352**

SmartMedia



16MB (C8989) **\$29**

32MB (C8990) **\$49**

64MB (C8991) **\$93**

128MB (D9233) **\$187**

MultiMedia Cards



16MB (C8994) **\$59**

32MB (C8995) **\$88**

64MB (C8996) **\$153**

DataLife Neons

Neon Coloured
floppy disks
for easy
filing.



(C9753) **\$9**

Verbatim DataLifePlus CD's represent the latest in technology. Featuring a proprietary blue Metal-Azo dye which has the best resistance to sunlight, silver reflective layer for optimum read and write performance and multispeed recording.

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know...



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Multimedia: DVD & Blank Media

Pioneer DVD-R MEDIA



- Jewel Case
- Memory-capacity of 4.7GB • Suitable for DVD Video & Data backup • Playable on both DVD-Video players & DVD-ROM drives • Commercial and Home DVD-Video production • Large sized data archive storage (not for use with Pioneer DVR-S201 authoring drive)

**DVS-R47A
(DVD-R)**

(E3852)

\$19

**DVS-
RP470SDF**

- White printable version (C2322)

\$22

DVD-RW MEDIA



Rewritable DVD media : Jewel case
Memory capacity of 4.7GB: Suitable for DVD video & data (not for use with Pioneer DVR-S201 authoring drive)

**DVS-RW47B
(DVD-RW)**

(D9300)

\$28

Pioneer

DVR-A04 DVD-R/RW Writer



NEW

FEATURES:

Writes: DVD-R (2x)
DVD-RW (1x)
CD-R (8x)
CD-RW (4x)

Reads: DVD-ROM, DVD-Video,
DVD-R, DVD-RW, CD-ROM,
CD-R, CD-RW, CD-TEXT,
Photo CD, Audio CD

Lower noise & vibration, smaller chassis and vertical mounting.

Pioneer's multi award winning DVD-R/RW drive is now even better with the release of the 4th generation at new lower pricing. It offers higher reading speeds, improved bundled software and is available in 3 upgrade kits.

INCLUDES:

- Veritas Record Now & DLA for data
- Arcsoft Showbiz for video editing
- PowerDVD 4.0 for movie playback
- Sonic MyDVD 3.0 & DVDit! 2.5LE for authoring
- 5 x Blockbuster Video DVD movie rental vouchers
- 1 x DVD-R media
- 1 x DVD-RW media
- Permanent pen



Includes: 5 x DVD movie rental vouchers from Blockbuster Video (included inside product box - see voucher for conditions and expiry dates)

DVR-A04 (E3676)

\$1,099RRP

DVR-A04FW – includes all of the above plus firewire card, cable and DVDit!SE authoring software

DVR-A04FW (E3679)

\$1,399RRP

DVR-A04PRO – includes all of the above plus ReelDVD professional authoring software (not including firewire card & cable)

DVR-A04PRO (E3681)

\$1,999RRP

APR

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TECHNOLOGY™**

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Smart Storage Solutions

Zip 100 USB Powered

An affordable total storage solution as easy to use, but far superior to, the floppy drive
Iomega's Zip® 100MB USB-Powered drive is affordable, reliable, easy to use and has a sleek, durable design powered through the USB cable for complete plug-and-play compatibility.



(D0587) **\$185**

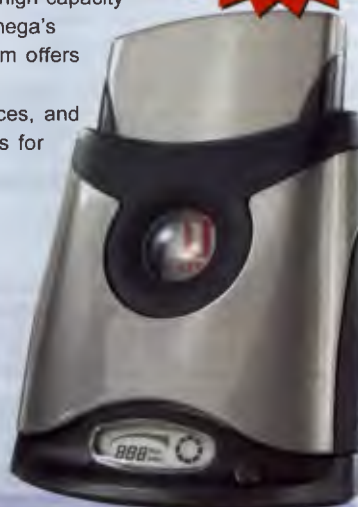
Peerless 10GB Storage

The next generation in high-capacity removable storage. Iomega's Peerless™ drive system offers 10GB and 20GB disks, interchangeable interfaces, and 15MB/sec transfer rates for stunning performance. Firewire® and USB 1.1 interfaces available.

USB 1.1 10GB

(C3525) **\$825**

*Rent: \$9.04/wk



Zip 100MB disk
(23772) **\$25**

10-pack:
(21889) **\$189**

Zip drive carry case
(31823) **\$49**

Zip disk 250Mb
(74454) **\$29**

Zip disk 250Mb 10 Pack
(74452) **\$249**

Jaz 1 GB disk
3 Pack
(32844) **\$569**

Jaz 2 GB disk
3 Pack
(57271) **\$615**

Predator

Iomega Predator 24x10x40CD-RW drive

The all new and exciting Iomega CDRW drive. An external 24x10x40 CDRW with USB 2.0 capability offers you blazing speed performance in terms of write speeds including a BURNPROOF feature to eliminate wasted CDs. The drive has one of the most unique designs with its sleek, slim and stylish architecture. Now included, the Iomega Hotburn Software for effortless 2 step CD creation.

(D9194) **\$549**

NEW



Iomega CD-RW CD-RW Drive

USB 2.0 capability gives Iomega's new external CD-RW drive amazing 16x10x40x performance with PCs that support the USB 2.0 standard. Also

fully backward compatible with USB 1.1, providing near-universal connectivity with Mac and PC computers and 4x4x6x performance. Includes Buffer Under-run protection and NEW Iomega HotBurn CD creation software.



(D4043) **\$499**

Host Powered 250 USB

NEW – Host-powered

Zip® 250MB USB

drive Now it's even easier to take your information with you. The Zip® 250 USB

drive is now available with a USB cable that provides both data and power, so you don't need any external power source. Its easy to connect (just plug it in) and easy to launch (no rebooting)! This new drive is compatible with most major operating systems and all Zip 100MB and 250MB Zip disks.



(B6404) **\$365**

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☐ Extend to a total of 3 Years Return to Base

☐ Extend to a total of 5 Years Return to Base

☐ Upgrade Return to Base of Warranty Extension to On-Site



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Direct

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Kodak PICTURE CARDS

32MB Picture Card
(62677)
\$65

64MB Picture Card
(82249)
\$99

128MB Picture Card
(A5253)
\$180

Kodak

Good quality
camera's need
good quality
papers

Kodak
Picture Paper

ultra glossy 15 sheets
(B1656)
\$14

Kodak
Picture Paper

Satin 15 sheets
(D3251)
\$14

Kodak
Picture Paper

Semi gloss 75 sheets
(D3258)
\$35

Kodak
Picture Paper

APR

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HARRIS
TECHNOLOGY™

Kodak DX3900

The high-performance camera.

Set your own color mode, ISO, and lighting exposure settings to get your perfect picture. Thanks to 3.1MP resolution, you'll get excellent picture quality on prints up to 11" x 14". The DX3900 comes with 6X zoom (2X optical and 3X digital) and a COMPACTFLASH Card to keep you shooting longer. And with the DX3900's optional telephoto, wide-angle, and close-up lens attachments, you can extend your creativity.

- CCD resolution
- image resolution 3.1 megapixel 2160x1440 pixels
- burst maximum 8 pictures at 0.8MP resolution
- lens 35 mm - 70 mm, (35 mm equiv.)
- auto focus
- zoom 6x (2x optical, 3x digital)



(C7689)

\$1,069

Kodak DX3700

Great pictures made easy.

EasyShare DX3700 Digital Camera. It has 3.1 MP resolution for excellent picture quality up to 11" x 14". Getting closer to the fun is easy with the 3x digital zoom.

- 3.1MP resolution
- 3x digital zoom!
- 8MB internal memory
- Compatible with the Kodak EasyShareCamera Dock



(D0792) **\$713**

Kodak DX4900

The first print-optimized 4.0 MP point & shoot digital camera designed to be one touch simple • New 3X Advanced Digital Zoom • 3 Sharpness models (sharp, standard, soft) • High Speed Sequence shooting up to 3FPS(Burst) • Flash modes (auto, fill, red-eye, off) • ISO settings (auto 100-400 or selectable 100,200,400) • White Balance modes (Auto, Daylight, Tungsten, Fluorescent) • Shutter Speed Controls Auto (1/2000 sec to 16 seconds)...



(E3471) **\$1,299**

Kodak DX3500

Simple-to-use

KODAK DX3500 Digital Camera . Get crisp, vibrant prints thanks to its 2.2MP resolution and 3X digital zoom. The DX3500 comes equipped with a COMPACTFLASH Card expansion slot so you can boost its memory capacity.

- KODAK Picture Software lets you instantly view, edit, e-mail, and print your pictures.
- Get great-looking prints with 2.2MP resolution and 3X digital zoom.



(C9587) **\$549**

Kodak DX3215

Making digital easy— one picture at a time.

Great pictures made easy. Want to get into digital with ease? You've found your camera. Introducing the KODAK EasyShare DX3215. This camera gets you started with 1.3MP resolution for great prints up to 5" x 7". A 4X zoom (2X optical and 2X digital) lets you get closer to the fun. It's the perfect camera to get you into digital picture-taking. • 1.3MP resolution • One-touch picture transfer • 8MB internal memory



(C9539) **\$449**

Kodak DX3600

Easy share dock system

KODAK DX3600 Digital Camera with Kodak easy share dock system. Get crisp, vibrant prints up to 8" x 10" thanks to its 2.2MP resolution and 3X digital zoom. Start shooting right away with 8MB of internal memory. The DX3600 comes equipped with a COMPACTFLASH Card expansion slot so you can boost your camera's memory capacity. Recording time only limited by the size of the compact flash being used.



(C5964) **\$779**

Kodak MC3 portable media device

All the multimedia you've ever wanted in one little player

Click into digital video mode to shoot funny movies or snap a few digital pictures. Download your favorite MP3s and take them with you, listening via ear buds or through your boom box or car stereo. It's one of the only MP3 players with a reflective color preview screen, so you can use it even in bright sunlight. Transferring to your PC is a breeze. It even lets you combine your pictures, music and video into unique music videos.



(B9818) **\$349**

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ARE SUBJECT TO
APPROVAL.

Surround Yourself With The Very Best

KeyCase™



NEW

KeyCase is a stylish all in one keyboard and protective case for your handheld. Easily enter data wherever you are: open the case to instantly access your handheld; to type, slide the SmartMotion cradle upright and you're ready. Works with the Palm m500 Series: m500, m505 and m125.

PDA not included

(E3568)

\$199

TypeAway™



NEW

TypeAway is an ultra slim, lightweight folding handheld keyboard. The responsive and comfortable keys enable fast data entry and shortcuts for instant access to your favourite applications. Works with Palm m500, m505 and m125.

PDA not included

(E3567)

\$159

QuickCam® Pro 3000



With its CCD sensor, QuickCam Pro 3000 takes pictures and videos with true 640x480 resolution. Use its built-in microphone to make live video calls over the Internet and send pictures and videos with your emails. QuickCam software lets you easily setup a digital surveillance camera and broadcast live video and audio over the web. Add professional titles, fades and wipes to your videos with the included MGI software. Connection via USB. 2-Year warranty.

(B0805)

\$215

ClickSmart™ 510



Take megapixel pictures and short videos, then share them over the Internet. Includes built-in flash and microphone. QuickSync feature and much more. 2-year warranty

(D5771)

\$335

Logitech® Z340

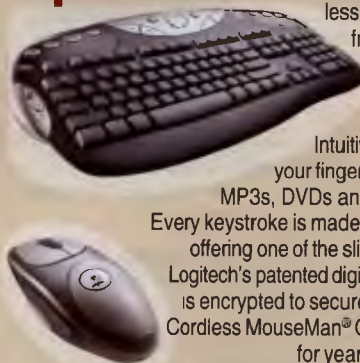


The Logitech Z340 produces clear highs and distortion-free lows through a revolutionary 3-piece system design, delivering twice the bass energy of similar systems. The satellites provide a convenient headphone jack and volume control. An internal power supply eliminates bulky wall adaptors. 2-year warranty"

(E1070)

\$115

Cordless Freedom™ Optical



The ultimate cordless keyboard and optical mouse. This striking combination is cordless for less clutter, more style and more freedom. Seamlessly access and navigate the Internet at the touch of a button or the scroll of the iNav wheel. Intuitive multimedia controls are at your fingertips and allow you to control MP3s, DVDs and CDs from your keyboard. Every keystroke is made easy with Zero Degree Tilt, offering one of the slimmest keyframes available. Logitech's patented digital cordless radio technology is encrypted to secure your privacy. The included Cordless MouseMan® Optical will perform perfectly for years to come. 5-year warranty.

(C6106)

\$215

Collect 500 Bonus Fly Buys points when you purchase E3568, E3567 between 20/03/02 - 30/04/02

Cordless MouseMan Optical
(C1186)

\$129



MouseMan Traveller
(D4014)

\$109



MouseMan Dual Optical
(D4013)

\$79



Optical Mouse
(B9948)

\$45



Internet Navigator
(D0560)

\$63



Deluxe Access 104
(B0819)

\$38



Life Is Good On Top



295LM 22" LCD

- 22" Monitor (Viewable Screen Size 56cm) TFT LCD
- Resolution: 1600 x 1200 @75Hz (Analog)
- Brightness: 180cd/m2 (Typical)
- Contrast Ratio: 300/1 (Typical)
- Video Signal Type: Separate, Digital Signal
- Input Connector: 15pin D-Sub, DVI-D, S-VHS, RCA (D6116)
- Detachable Stereo Speakers
- 3 USB Ports, DDC 2B
- Weight: 18.0Kg (With Speaker)

\$7,499

*Rent: \$65.06/wk

Web Direct

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(at top of page) for more products and latest info!

575LE 15" LCD



- 15" LCD Flatron Monitor •Res: 1024x768 @75Hz •Brightness: 250 cd/m2 (Typical)
- Contrast Ratio: 300:1 •Video Signal Type: RGB analog, Separate H/V •Plug & Play: DDC 2B
- OCD Control •TCO-99, TUV-GS, VCCI, Energy Star, GOST CE Compliant •Weight: 5.1kg (Net)

(D3281) **\$997**
*Rent: \$10.92/wk

575LM 15" LCD MM



- Multimedia •15.1" (38.35cm) Screen •Pixel Pitch 0.3*0.3mm •Pixel Format: RGB Vertical Stripe Arrangement •Anti-Glare, Hard Coating Surface Treatment •Screen Brightness: 200cd/m2 (Typ) •Contrast Ratio: 200:1 (Typ) •Max Res: 1024*1768@85Hz •Weight: 5.1kg

(E0767) **\$1,149**
*Rent: \$12.59/wk

885LE 18" LCD



- 18.1" LCD screen •0.28*0.28mm Pixel Pitch
- Max Res 1280*1024 @ 75Hz
- Brightness 170cd/m (Typ) •Contrast Ratio 200:
- Viewing Angle 160 Degrees Horizontal, 160 Degrees vertical
- Digital soft touch OSD keys, TCO 99 Certified

(D3288) **\$2,939**
*Rent: \$28.82/wk

SW700S 17" CRT

- 17"CRT •27mm dot pitch •1280 x 1024 @ 60Hz •invar mask •Anti-static, anti-glare, anti-reflection •Dynamic focus

(E1238) **\$399**



SW57M 15" CRT MM

- Integrated stereo amplifier and speakers
- Multi-synchronous support from 640x480 up to 1280x1024 •Flicker-free 1024x768 non-interlaced at 75Hz •MS Windows 95 PnP, VESA compliant.

(42879) **\$375**



DRIVES



- 24x10x40 CDRW
- 8MB buffer with under-run technology

(E1961) **\$209**

CDRW/ DVD Combo

- 12x8x32x8DVD •2MB buffer with under-run technology

(E0772) **\$319**

LG 16x DVD

- with power DVD software

(E0770) **\$169**

775FT FLATRON

- Triple Flat screen •Viewable Screen Size 16.01" •Pixel Pitch 0.24mm •Flat Tension Mask
- Anti Glare •Dynamic Focus
- Max Res: 1280x1024 @ 60Hz
- Plug & Play: DDC 2B •Weight: 17.8Kg (Net) •Dampening Wire Free

(E0764) **\$479**



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CM615
17" General Purpose CRT Monitor
1024x768@85Hz
0.24mm Horizontal Dot Pitch
(97802) **\$399**



CM621
17" Flat CRT Monitor 1024x768@85Hz
0.22mm Horizontal Dot Pitch
(C9156) **\$479**



CML153XW
15" TFT LCD Monitor
with Speakers - XGA
1024 x 768 @ 75Hz
(D5744) **\$995**



CML155XW
15" TFT LCD Monitor
1024x768 @ 75Hz
500:1 High Contrast
Video Inputs
Mic + Spkr
(D7708) **\$1,129**

HITACHI AUSTRALIA LIMITED - HITACHI is a registered trademark of Hitachi Ltd.



CM715
19" General Purpose CRT Monitor
1600x1200@75Hz - 0.22mm
Horizontal Dot Pitch
(97803) **\$695**



CM721
19" Flat CRT Monitor
1600x1200@75Hz
0.20mm Horizontal Dot Pitch
(C8839) **\$849**



CMP205SX
25" Plasma Display
- SXGA (1280x1024)
(88323) **\$4,599**



CP-S225W HOME THEATRE LCD PROJECTOR

- SVGA 1100 ANSI Lumen
- 32dB Whisper Mode (800 ANSI)
- Light Weight (only 2.4kg)
- Component Input (for DVD and other high quality video sources)
- Short Throw Distance - ensures large images even in limited spaces

(D9132) **\$4,249**



CML171SXW
17" TFT LCD Monitor
with Speakers - SXGA
1280x1024@75Hz
(E3698) **\$1,989**



CML181SXW
18" TFT LCD Monitor
1280x1024@85Hz
(D7709) **\$2,898**



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ELECTRONICS

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High-breed Monitors

SyncMaster 151s 15" LCD monitor

**Specifications:**

- 15" viewable screen resolution XGA(1024 x 768)
- Colours 16.2M
- H.Frequency 30 ~ 61 kHz
- V.Frequency 50 ~ 75 Hz
- Contrast 330:1
- Luminance 250cd/m2
- Viewing Angle 140°/120°
- Input connectors 15pin D-Sub
- Sync Type Composite H/V, SOG
- Power 30W(Max.)

Optional Pivot to Portrait*

Rent* \$9.30/wk (D3614) **\$849**

*the head of the monitor can be turned to provide either a portrait or landscape picture.

SyncMaster 151BM 15" Multimedia LCD monitor

**Specifications:**

- 15" Viewable LCD Monitor
- 1024 x 768 max resolution @ 76Hz
- 140°/120° viewing angle.
- Fast and accurate auto adjustment
- NUTEK Certified
- Three colour choices: silver/black/ivory
- Pivot technology
- Built in Multimedia Speakers
- Optional USB-Hub available
- Weight 4.1kg

Optional Pivot to Portrait*

Rent* \$11.71/wk (D6237) **\$1,069**

SyncMaster 753DFX 17" CRT Monitor

**SOHO Series Features:**

Flatter images are easier on the eyes and slimmer products save on space and make users comfortable in their working environment. That's real value. And that's also what makes Samsung the World's Number 1 Monitor manufacturer.

Specifications:

- 17"(16" Viewable)
- 0.20mm dot pitch (horizontal)
- 1280 x 1024 @ 66Hz Maximum Resolution
- DynaFlat - Infinitely Flat Tube
- Smart III surface treatment (anti-static & anti-glare)
- On Screen Digital Display
- Plug & Play Compatibility
- MPR-II/NUTEK certified

(D6231) **\$479**

SyncMaster 955df 19" CRT Monitor

**Graphix Pro Series Features:**

Samsung continues to spearhead the monitor market in meeting customer's needs, built on its reputation as a leading provider of the highest quality monitors utilising the latest technologies to develop products to meet customers demands. Samsung's commitment to customer satisfaction and leadership in the monitor industry has been proven by the value that Samsung monitors provide its customers.

Specifications:

- Model No.: 955df 19" (18" Viewable)
- 0.20mm dot pitch (Horizontal)
- 1600 x 1200 @ 68Hz Maximum Resolution
- DYNA Flat - Infinitely Flat Tube
- Smart III Surface Treatment (Anti-Static & Anti-Glare)
- Onscreen Digital Display
- MPR-II/NUTEK Certified
- Plug & Play Capability

Rent* \$9.04/wk (C3975) **\$825**

SyncMaster 171s 17" LCD Monitor



The SyncMaster171S is the ideal display for all business and professional applications. Its new slim design refined with Samsung's digital technology allows the product to fit all working environments. Optional Pivot stand enables a rotating feature by which you can see one full page of an A4 document without scrolling. The SyncMaster171S is power efficient as well. It consumes less than 1 Watt of power in power off mode, and its built-in power adaptor lets you free from a dangling power brick, leaving your desk clean and simple.

Rent* \$19.84/wk (D9313) **\$1,810**Ask
About...

- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

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Wide

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SCANNERS... SCANNERS... Canon



BJC-1000SP Bubble Jet Printer

- Outstanding operating economy.
- Vivid colours, even on plain paper.
- Exceptional photographic quality.
- Automatic image improvement.
- Banner printing and outstanding versatility
- 720 x 360dpi

(A1792) **\$85**



S200 Bubble Jet Printer

- Vivid Photo Function
- 2880 x 720 dpi
- Up to 5ppm
- Dual Ink Tanks

(E1132) **\$189RRP**



S300 Colour Bubble Jet Printer

- Up to 11 black and white and 7.5 Colour pages per minute
- Up to 2400 x 1200dpi print resolution
- Separate black and tri-colour ink tanks
- USB Interface for Windows and Mac
- Compact footprint - ideal for the home office
- Colour lasts up to 25 years using Canon's Photo Paper Pro

(D4023) **\$249**



S750 Bubble Jet Printer

- First Bubble Jet With 20ppm
- 1200 x 2400DPI
- Up to 20ppm
- Four Individual Ink Tanks

(E1134) **\$549RRP**



S900 Bubble Jet Printer

- Prints A4 Photo's in approx 1min
- 2400 x 1200 Optical DPI
- Six Individual Photo Ink Tanks

(E1135) **\$899RRP**



S9000 Bubble Jet Printer

- A3+ Printing on S9000

(E1248) **\$1,199**



LBP810

(C3917) **\$498**

- High resolution 600 dpi printing for crisp text and graphics
- 8 ppm engine speed
- Wide media compatibility, print transparencies, envelopes, postcards etc
- Outstanding line definition - equivalent to 2400dpi horizontally
- Parallel & USB connections



LBP1000

(95983) **\$969**

- 10 pages per minute print engine at 1200 dpi resolution
- Energy saving 'On-Demand' toner fusing
- Cost-saving 'economy' printing mode
- Powerful processor to ensure maximum throughput



N640Pex Flatbed Scanner

- Optical resolution of 600 x 1200dpi
- 42-bit input
- Only 4 cm tall
- Parallel interface
- Scans up to A4 size (Quite operation)
- Complete software package, LIDE Technology

(D4026) **\$135**



D646U Flatbed Scanner

- Fabulous Entry Level Scanner
- 600 x 1200 Optical DPI
- Z-Lid For Easy Book Scanning
- Modern Software Suite
- Archsoft Photo Studio 2000 + OCR Software

(E1151) **\$179**



N670U Flatbed Scanner

- One touch scan controls
- USB Interface
- 600 x 1200 dpi
- Scan, click and burn photos onto CD's.
- Advanced Z-Lid cover simplifies scanning of bulky items, books and magazines

(D1005) **\$175**



N1240U Flatbed Scanner

- Amazing 1200 x 2400dpi optical with selectable resolution up to 9600dpi.
- Stylish charcoal and aluminium finish.
- New Z-lid for scanning thick books etc.
- Software included OmniPage and PhotoShop Elements
- 1200 x 2400dpi

(C7589) **\$279**



N1250U2 / N1250U2F Flatbed Scanner

- High Speed At the Right Price
- 1200 x 2400 DPI Optical Resolution
- USB 2.0 For Faster Scanning
- Easy One Touch Control
- Photo Studio 2000 Omnipage Pro 9.5 OCR Software

(E1246) **\$249** (E1230) **\$399**

• 35mm Film Scanning



1760e

(B1751) **\$1,259RRP**

- 17 page per minute print speed
- Energy saving 'On-Demand' toner fusing
- Powerful RISC processor
- PCL6 Print Language emulation



LBP2000

(E1235) **\$Call**

- Affordable A3 Laser Printing
- 1200 x 600 Optical dpi
- Up to 20ppm
- PCL6 With Complete Network Options

NEW

CAMERAS...

PSA30*



1.2 MEGA PIXEL (E3967)

\$699RRP

PSA40*



2.0 MEGA PIXEL (E3969)

\$999RRP

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CAMERAS...

PowerShot DIGITAL IXUS



(C5389) **1,039**

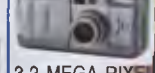
PowerShot DIGITAL IXUS 300



(C5653)

\$1,198

S30 / S40



3.2 MEGA PIXEL (D5915)

\$1,475

4 MEGA PIXEL (C5937)

\$1,764

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hp designjets

hp designjet 50ps, 20ps & 10ps

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Pre-press proofing solution

RES: up to 2400x1200dpi
SPEED: A3+ print outs can be generated at a super fast speed of up to 4 mpp
INK: 6-ink modular cartridge systems with four 69ml (cmk) and two 28ml cartridges that help minimise printer down time and reduce cost per print
RIP: stand alone or server based RIP optimises your system's resources
PAPER: up to A3

	Rent* /wk	Part #	
hp designjet 50ps	\$60.69	(C8933)	\$6,995
Professional solution A3+ graphics colour thermal injetprinter			
hp designjet 20ps	\$37.22	(C8932)	\$3,795
Work group solution A3+ graphics colour thermal injetprinter			
hp designjet 10ps	\$25.45	(C8931)	\$2,595
Personal Solution A3+ graphics colour thermal injetprinter			

hp designjet 800

Professional graphics printer wide photo quality ads and graphics

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- Extend to a total of 3 Years Return to Base
- Extend to a total of 5 Years Return to Base
- Upgrade Return to Base of Warranty Extension to On-Site



RES: 2400x1200dpi
SPEED: Line drawing prints times as short as 60 seconds (D size 24-36Inches)
Colour Image Fast: 7.9m²/hour Normal: 3.34m²/hour Best: 1.95m²/hour
MEDIA: Coated & glossy paper, technical media. Sheet & roll feed, auto cutter
SIZES: Sheet: 211mm - 1897mm , Roll: 24" (w) x 45.7m (l)
I/FACE: Parallel, USB
SIZE: Printer in 2 sizes 42 or 24 Inches wide

	Rent* /wk	Part #	
hp designjet 800 24"	\$83.25	(B8514)	\$9,750
hp designjet 800PS 24"	\$114.65	(B8518)	\$13,995
hp designjet 800 42"	\$94.17	(B8513)	\$11,495
hp designjet 800PS 42"	\$133.12	(B8519)	\$16,250

hp designjet 5000

Professional graphics printer photo quality unmatched by any other printer

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RES: 1200x600dpi on glossy media (6 colours:CMYKcm)
SPEED: max: 46.4 sq m²/hr, (42" dye/uv)
max: 52.9 sq m²/hr, (60-inch dye/uv)
MEDIA: Coated & glossy paper, backlit, opaque, vinyl, canvas...
SIZES: Sheet: 211mm- 914mm (w) x 559- 1600mm (l);
Roll: 24/36/42/54/60" (w), up to 91.4m (l)
I/FACE: Parallel, hp JetDirect 610N 10/100 Base TX Print Server
SIZE: Printer in 2 sizes 42 or 60 Inches wide

	Rent* /wk	Part #	
hp designjet 5000 42"	\$159.88	(B6514)	\$19,795
hp designjet 5000PS 42"	\$209.15	(B9792)	\$25,895
hp designjet 5000 60"	\$Call	(B6515)	\$31,599
hp designjet 5000PS 60"	\$Call	(B9791)	\$38,580

APR
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hp LaserJet & Injet business printers

hp LaserJet 3300 & 3330

full-featured multi-function printer

• speed of up to 14 ppm (A4 size) • compact size helps businesses to save office space • the HP UltraPrecise print cartridges print more than 2,500 pages each. The optional high-capacity cartridge prints up to 3,500 pages. • HP LaserJet 3300 series as a duty cycle of 10,000 pages-per-month. • 66 MHz processor and 32 MB RAM. • one-year warranty • digital copying generates 15 cpm at a resolution of 600 x 600 dpi • flatbed scanner scans areas ranging from 2 x 3.5" (51 x 89 mm) to 8.5 x 35" (216 x 914 mm) with a resolution of 600 ppi colour.

hp LaserJet 3300mpf
digital printer-copier (E3828) **\$1,519**

hp LaserJet 3330mpf
printer-fax-copier-scanner (E3864) **\$1,935**



hp LaserJet 1200 Series

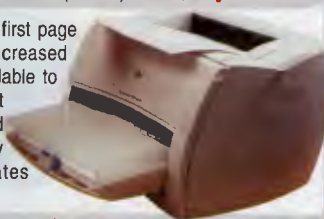
hp LaserJet 1200 (base unit) (B9799) **\$785**

hp LaserJet 1200n-16MB (B9958) **\$1,295**

• 14 ppm A4 (best-in-class) and first page out in less than 10 seconds • increased memory of 8MB of RAM (upgradable to 72 MB) • protected 250-sheet input tray and 10-sheet priority feed tray • 10,000 pages monthly duty cycle • instant-on-fuser eliminates warm up time.

hp LaserJet 1220 (B9968) **\$925**

You can now enjoy the comfort of printing, colour scanning and copying from one machine with the copier/scanner attachment for your hp LaserJet 1200. Beside enjoying all the best-in-class printing capabilities of the hp LaserJet 1200, you can now take control of your document management with the added benefit of colour scanning and copying.

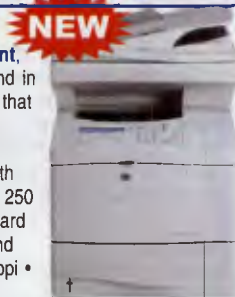


hp LaserJet 4100 Series

intelligent multi-function printer

• HP LaserJet 4100mpf allows users to print, copy, colour scan to email and digital send in one machine. Replacing separate devices that can perform these tasks, the multi-function printer saves costs and office space • HP LaserJet 4100mpf prints at 24 ppm (A4) with first page out in less than 12 seconds • the 250 MHz processor, 64 MB RAM and 5.1 GB hard disk enable fast processing of large files and print jobs. • scan at a resolution up to 600 ppi • Walk-up copying is easy and simple. • HP LaserJet 4100mpf, HP print cartridge and software work hand-in-hand to allow users to monitor and order supplies, hence ensuring uninterrupted printing, consistent output quality and efficient workflow.

hp LaserJet 4100mpf (E3829) **\$8,899**



hp LaserJet 8550 Series

get ahead with professional in-house printing

With its advanced features and exceptional performance, your productivity will be dramatically increased. The industry standard for departmental network colour printing, this top-of-the-line printer offers a complete network printing solution that grows with your business. • paper sizes (up to A3) • 60,000 page duty cycle and 24 ppm • print on both sides of the page with the optional duplex unit (standard on 8550dn & gn).

hp LaserJet 8550 (98869) **\$8,399**

hp LaserJet 8550n (98870) **\$10,099**

hp LaserJet 8550dn (98871) **\$12,799**

hp LaserJet 8550gn (98872) **\$14,999**



hp business Inkjet 2600 Series

wide-format (A3+) colour network printer

ultra-fast print speed
• some of the fastest colour print network. • up to 15 ppm (black & white) and 11 ppm (colour) in fast mode and 8 ppm (black & white) and 6 ppm (colour) in normal mode. • your most complex graphic documents are easily handled with the power of dual processors (167/160 MHz) and 48 MB of printer memory-upgradable to 176 MB. • wide-format (A3+) high quality printing - crisp and vivid colour documents with resolution up to 1200 x 600 dpi and HP PhotoRet 3 colour layering technology

hp business Inkjet 2600 (Base) (E3874) **\$2,725**

hp business Inkjet 2600dn
(network duplex) (E3875) **\$3,795**



hp Injet Printer cp1700 Series

professional wide-format (A3+) colour printers

Designed for small businesses and design professionals, A powerful communication tool that produces professional colour business documents, collaterals, premium presentations, proofs and mock-ups.

• Up to 16 ppm black and 14.5 ppm colour print speeds (cp1700 printer) • 16 MB built-in RAM • Up to 5,000 pages per month duty cycle • Supports: Windows 95/98/Me; Windows NT 4.0/2000; • Energy Star compliant • Off mode: 6 watts • 150-sheet standard input tray • Wide format printer (media sizes 4 x 6" / A6 to 13 x 19" / A3+); straight paper path

hp colour Injet printer cp1700 (E0150) **\$1,175**

hp colour Injet printer cp1700d (D6139) **\$1,425**



hp LaserJet 1000 USB

(C9361) **\$599**

hp LaserJet 2200 Series

hp 2200d
(base unit)
(B9956) **\$1,537**
hp 2200dn
(B9957) **\$2,045**
hp 2200dtn
(B9898) **\$2,585**

hp LaserJet 4550 Series

hp colour LaserJet 4550
A4 16PPM
64Mb (B2381) **\$3,825**
hp colour LaserJet 4550N A4
16PPM 64Mb
10/100
(B2382) **\$4,425**

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hp deskjet 845c

Step up to HP's photo-quality printer that gives you true-to-original brilliant colours

- crisp black text and photo-quality images
- up to 600 x 1200 dpi
- no swapping ink cartridges to print outstanding photo-quality colour
- ideal for work and other creative projects
- prints up to 8 ppm black and 5ppm colour
- USB connectivity



(D3921) **\$169**

hp officejet V40



All In One Scanner/Printer/Fax/Copier

- Full-featured printing, faxing, scanning and copying-all in color
- Convenient access to color faxing, copying and scanning from the front panel
- Enhanced printing and copying speeds and richer, sharper color on all four functions
- State-of-the-art performance and speed combined with time-saving features, user-friendly simplicity and a self-sufficient work space at a competitive price
- Reliable and durable- backed by award-winning HP Customer Care



(D7688) **\$499**

hp deskjet 948c

Explore your creativity and print photos easily with hp's premium photo-quality colour printer

- up to 2400 x 1200 dpi
- optional automatic two-sided printing
- space-saving fold-up paper tray
- best photo-quality with HP PhotoREt 3
- parallel and USB connectivity
- prints up to 12 ppm black and 10 ppm colour



(D3927) **\$289**

hp officejet K80

Ideal for:

Photographers needing photo-quality prints on any paper
Small offices looking to share faxing, copying, and printing responsibilities
Office managers looking for a compact, cost-effective office solution.



Features

- colour speed 10 ppm colour
- black speed 12 ppm black
- HP Photo REt III technology (color layering technology)
- scanner enhanced resolution 3600 dpi
- scanner bit depth 36-bit A/D colour.

(B2081) **\$799**

hp deskjet 990c

Best Photo-Quality plus Premier Business Printing

- Infrared printing from PDAs, notebook computers, and other mobile devices.
- Up to 17 ppm in black, 13 ppm in color
- Optical sensor detects paper type, then selects the ideal print mode
- Automatic Duplex printing capability



(B1967) **\$599**

hp officejet G85

All Colour: Printer, Copier, Scanner & Fax

Prints at up to 12 ppm black, 10 ppm color using HP photoREt 3 Precision Technology, 2400 x 1200dpi colour, as well as flatbed 36-bit scanning, faster copying speeds, and upgradeable networking capability which allows one unit to be shared by several PCs. Each model combines a color printer, scanner, copier and a walk-up color fax.



(A0062) **\$1,169**

hp scanjets & consumables

hp scanjet 4470c

High-quality scanner for the home with excellent features.



Release your creativity with the Scanjet 4470c. Save your prized photos and documents onto a CD with just one click. Make scanning easy and fun with the other one-button functions: "scan," "share to web," "scan to e-mail," "color copy," "photo reprint."

- MS Windows 95/98/2000/Me/NT4.0
- Includes USB cable, power cord and active transparency adaptor.
- RES: 1200dpi optical, 1200 x 2400dpi hardware
- bit depth: 48-bit colour
- dimensions: (WxDxH) 305mm x 505mm x 72mm. 2.9kg
- 1 year hardware warranty & telephone support

(C8119) **\$349**

hp scanjet 5470c

High-performance 2400dpi scanner for professional use.



Your projects will shine with the 5470c color scanner. Scan 2400 dpi and 48 bit color. Get preview scans in 8 seconds. Eight one-touch buttons let you "scan," "e-mail," "photo reprint," and more.

- MS Windows 95/98/2000/Me/NT4.0
- Includes USB & parallel cable, power cord active transparency adaptor.
- RES: 2400dpi optical, 2400 x 2400dpi hardware
- 35 seconds - 4 x 6 inch colour photo into MS Word
- 45 seconds - OCR full page of text into MS Word.
- 1 year hardware warranty & telephone support

(C7652) **\$529**

Ask About...



- ☐ Extend to a total of 3 Years Return to Base
- ☐ Extend to a total of 5 Years Return to Base
- ☐ Upgrade Return to Base of Warranty Extension to On-Site

ink cartridges

No 29 Black inkjet Cartridge (21919) **\$69**

No 45 Black Inkjet Cartridge (22643) **\$69**

No 78 Tri-Colour Inkjet print Cartridge (86183) **\$79**

No 49 Tri Colour Inkjet print Cartridge (22331) **\$69**

No 23 Tri Colour Inkjet print Cartridge (78344) **\$79**

No 78 Tri Colour Inkjet Cartridge (97335) **\$149**

toner

hp C4127x LaserJet 4000 Series 10,000 Page Toner (54731) **\$260**

hp C4096a LaserJet 2100/2200 Series 5,000 Page Toner (73192) **\$210**

hp 92298a LaserJet Print Cartridge for LJ 4/M,4+/M+,5/ N/M 6800 page Toner (07995) **\$199**

hp 92298x LaserJet Print Cartridge for LJ 4/M+/M+/ 5/5M/5N 8800 Page Toner (42504) **\$209**

hp C3909a LaserJet Print Cartridge for 5Si/Mopier/ 8000 15000 Page Toner (26450) **\$359**

hp C4092a LaserJet print Cartridge for HP LaserJet 1100, 3200 (70459) **\$130**

paper

hp C7014a Colour fast photo paper - Glossy 20 Sheets (C6528) **\$58**

hp C7006a Every Day photo paper- Semi Gloss 25 Sheets (C6840) **\$15**

hp C6765a Photo Paper - Glossy (81524) **\$18**

hp C6065a Iron On T-shirt Transfers A4 10 Sheets (52818) **\$26**

hp Q1936a Premium Injet A4 paper 200 Sheets (D9329) **\$39**

hp Q1937a premium Injet paper - A3 100 sheets (E3640) **\$55**

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High Performance Desktop Laser Printers

The affordable laser printer for users with demanding print needs

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Web Direct

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Lexmark E210

- 12 pages per minute
- 600x600 dpi image quality
- 66MHz RISC processor
- 4MB RAM standard
- Windows and Linux support
- Parallel and USB standard
- 1 year LexExpress warranty

(D5338) **\$509**

The fast and reliable laser printer for users with demanding print needs



Lexmark E322

- 16 pages per minute
- 1200 dpi Image Quality
- 133MHz RISC processor
- 8MB RAM standard
- PS L2 and PCL 6 standard
- Parallel and USB standard
- 2 years LexExpress warranty

*Rent: \$9.19/wk (D5341) **\$839**

The high performance compact network ready printer with advanced paper handling



Lexmark E322N

The high performance compact network ready printer with advanced paper handling

- Integrated Ethernet 10/100BaseTx and USB
- 16 pages per minute
- 1200 dpi Image Quality
- 133MHz RISC processor
- 16MB RAM standard
- PS L2 and PCL 6 standard
- Dual input trays, 1 x 150 and 1 x 250 sheet max
- Ships with 3000 page toner cartridge @ 5%
- Windows, Unix and Linux compatible
- 2 years LexExpress warranty

*Rent: \$15.33/wk (D5349) **\$1,399**

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Video Editing Hardware



DV500 PLUS

PRICE DROP
(B9962)
\$1,599

As successor to the award winning DV500 solution, the DV500 PLUS boasts best of class real-time performance. With a superior render free, real-time feature set, DV500 PLUS saves you time where it matters most. DV500 PLUS is the ONLY real-time editing solution which takes full advantage of all Adobe Premiere 6.0 capabilities with professional quality features. DV500 PLUS combines analogue and digital video sources with a professional set of real-time features where they matter most- Real-time where it counts! Supports all Windows XP/ 2000/ NT/ Me/ 98SE/ 98 operating systems.

DV200

PRICE DROP
(77104)
\$799

Pinnacle Systems DV200 Firewire® digital video editing card is the industry's most affordable fully featured IEEE-1394 editing solution. DV200 features Pinnacle Systems' DVTools pre-production software for automatic tape scanning, batch capturing, and complete DV device control. Includes Adobe Premiere 6.0, Hollywood FX Copper and Alpha Magic, Smart Sound Quicktracks, Pinnacle TitleDeko and DV Tools, Adobe Photoshop LE, Pinnacle Systems INSTANT Video play back plug-in, and Total Training Introduction to Premiere



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STUDIO DELUXE



NEW!
(E1100)
\$849

Pinnacle Studio Deluxe delivers everything you need to make fantastic Digital movies on your PC, all in one easy to use package. Pinnacle Studio Deluxe includes full versions of Pinnacle Studio version 7, Pinnacle Express and Pinnacle Hollywood FX for Studio. In addition, Pinnacle Studio Deluxe includes the new Pinnacle AVDV Analogue and Digital video capture card for super high quality capture from just about any source. From Analogue or Digital video capture and editing all the way through to burning a disc to play on your set top DVD player, Pinnacle Studio Deluxe makes it easy to make great movies at home.

MP20

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(E1101)
\$649

Going ahead in the world of multimedia, Pinnacle is proud to launch its new innovation MP20. The MP20 provides everything you need to back up any video onto a DVD-R or RW so it can be watched later on a DVD player. Did you know that after 8 years your VHS tapes will be unwatchable? Back up your VHS or Camcorder tapes and DVDs onto CD or DVD now before its too late! - Capture videos from Composite and S-Video sources - Create MPEG1 or MPEG2 files for VCD, SVCD or DVD authoring - Author like a pro DVDs with interactive menus with the Pinnacle Impression DVD SE.



Ask About...



- Extend to a total of 3 Years Return to Base
- Extend to a total of 5 Years Return to Base
- Upgrade Return to Base of Warranty Extension to On-Site

STUDIO DV PLUS



(A8908)
\$449

Studio DVplus is the perfect companion to your DV or Digital8 camcorder. You can transfer digital video directly from your camcorder to your PC hard drive. With the easy-to-learn Studio software, you'll be able to create professional-style movies from your DV or Digital8 camcorder tapes. The FireWire (IEEE 1394) and S-VHS outputs will let you export your final work on any kind of tape so anybody equipped with a regular VCR can play your tapes.

EXPRESS DV

(D9016)
\$245

Pinnacle Express is the quickest and easiest way to watch your home movies or digital pictures on DVD. Simply connect your DV camcorder to your PC, and Pinnacle Express lets you capture video, add menus and titles and burn CDs or DVDs that play in your set top DVD Player.



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(B4376)

\$665

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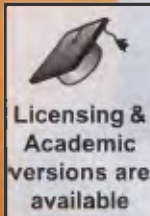
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(D5803)

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(C6730)

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(D8833)

\$109



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Email Content Checking & Anti-virus for Exchange



Mail essentials is the market leading email content security software. It acts as an Email Firewall and protects you from headline-hitting viruses such as Sircam, as well as email attacks targeted at your organisation. In addition, Mail essentials adds important key features to your mail server, such as Anti-Spam, Email encryption, Email archiving, Disclaimers, Personalised auto responders, POP3 downloading and more. Native Exchange 2000 version is now available which also scans internal mail!

from: 10 users

(C4380)

\$677

LANguard

Content Filtering and Anti-virus for ISA Server



LANguard for ISA Server helps you protect against the huge security risk posed by HTTP and FTP access from the workplace. Built on top of Microsoft ISA server, it scans all inbound material for viruses, Trojans or objectionable material. Using LANguard's powerful rules engine, you can configure rule sets that allow you to quarantine dangerous files for administrator approval. LANguard also enables you to set up rules that can prevent unproductive use of the Internet at the workplace.

from: 25 users

(C4366)

\$839

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Intrusion Detection through Security Event Log Monitoring



LANguard Security Event Log Monitor (S.E.L.M.) is a revolutionary new intrusion detection product that alerts you to any unauthorised activity occurring on your network by monitoring the security event logs of all your Windows NT/2000 servers and workstations. A firewall will offer no protection against attacks originating from within the company. LANguard SELM alerts you to possible intrusions/attacks in real time.

from: 5 User Workstations

(C9889)

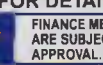
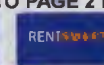
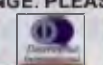
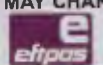
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APR 52

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(D3901) **\$674**

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(C5869) **\$675**
UPGRADE (C9209) **\$355**

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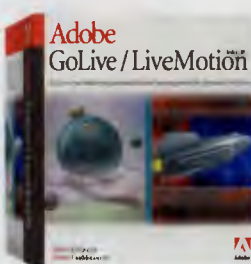
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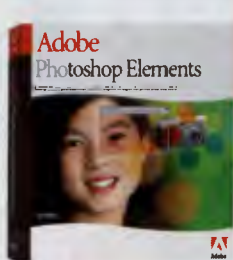
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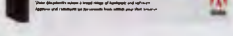


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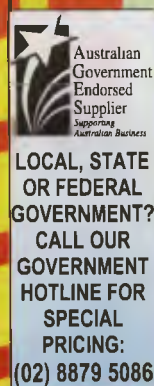
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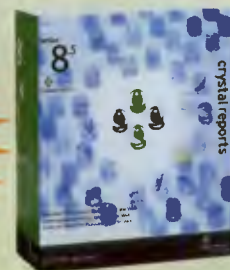
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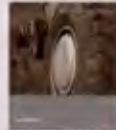
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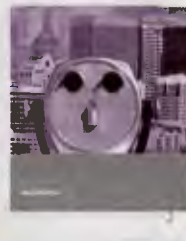
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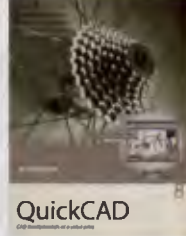
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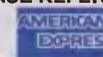
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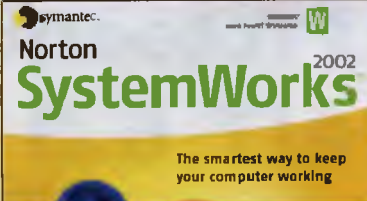
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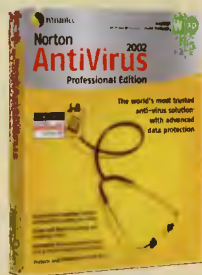
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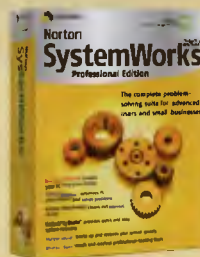
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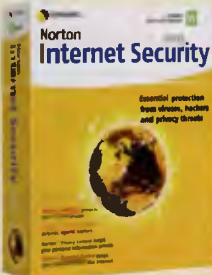
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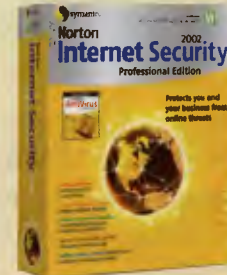
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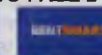
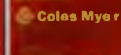
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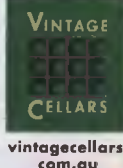
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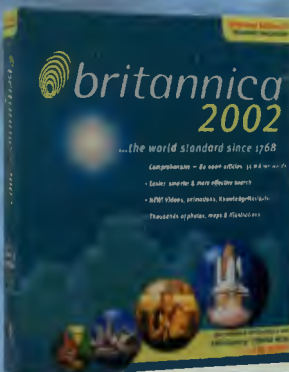


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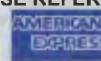
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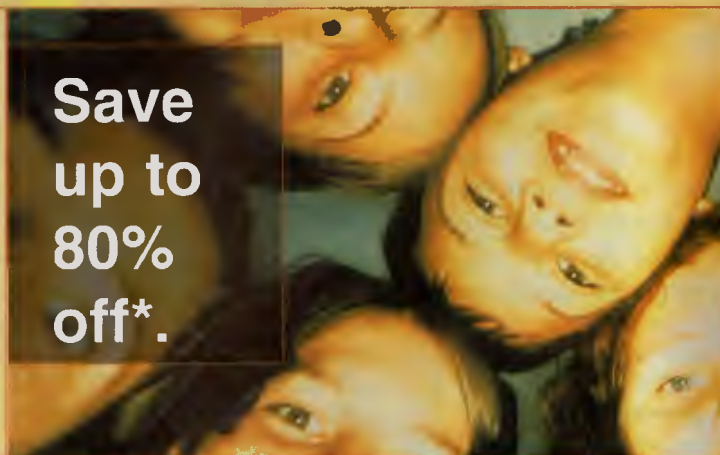
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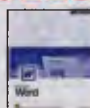
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Microsoft® Office XP is the most significant version of Office ever released!

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PRODUCT DESCRIPTION	Office ^{XP} STANDARD	Office ^{XP} PROFESSIONAL	Office ^{XP} DEVELOPER	Office ^{XP} PROFESSIONAL SPECIAL EDITION UPGRADE	Office ^{XP} PROFESSIONAL SUBSCRIPTION	Office ^{XP} SMALL BUSINESS SUBSCRIPTION
Word 2002						
Excel 2002						
Outlook 2002						
PowerPoint 2002						
Access 2002						
Publisher 2002						
FrontPage 2002						
Developer Tools						
Intellimouse Explorer						
Subscription	-	-	-	-	12 Months	12 Months
Full Version:	\$945	\$1,129	\$1,515	GREAT PRICE	\$349	\$275
Part Number	(C2082)	(C2084)	(C2772)		(C2837)	(C7855)
Upgrade:	\$460	\$654	\$1,049	\$489	N/A	N/A
Part Number	(C2083)	(C2085)	(C2773)	(C2081)		

 **Microsoft Office XP**

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MS Office XP Pro Special Edition, includes the core programs in Office XP Pro as well as MS FrontPage, MS Publisher and the new MS IntelliMouse Explorer. See Back Page for Details.

MS Office XP Pro Special Edition
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Whether you are designing motion graphics or building data-driven applications, Flash MX has the tools you need to produce great results and deliver the best user experience.

Macromedia Flash XP
\$929.00

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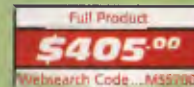
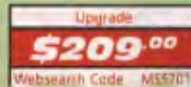


Microsoft Windows XP Home

Windows XP Home Edition is an excellent choice for most home users, with exciting new features that help you do more with your computer.

- New visual design makes it easier to do common tasks efficiently.
- Digital photo features let you acquire, organize, and share pictures.
- All-in-one music tool for discovering, downloading, storing, and playback of the highest-quality digital music.
- Everything you need to create, share, and enjoy videos on your computer.
- Easy computer sharing and home networking.
- The ultimate communication tool for instant messaging, voice or video conversations.
- Tools for recovering from problems or getting help from an expert.
- The most reliable, secure, and dependable operating system to keep your system up and running.

From digital photos, music and video to building a home network, Windows XP Home Edition brings you into the digital age with ease.



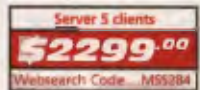
MICROSOFT

Windows 2000 Server

The Windows 2000 Server Family integrates standards-based directory, Web, application, communications, file and print services with high reliability, efficient management, and support for the latest advances in networking hardware to provide the best foundation for integrating your business with the Internet.



Microsoft



Microsoft Windows XP Professional

Windows XP Professional, provides the highest levels of performance, productivity, and security. It is the best choice for business users and for home users who demand the most from their systems. All the benefits of Windows XP Home Edition, *plus*

- Greater security, including the ability to encrypt your files and folders, to protect your business data.
- Premier mobile support for the ability to work offline or access your computer remotely.
- Built-in support for high-performance multiprocessor systems.
- Designed to work with Microsoft Windows Servers and management solutions.
- Communicate efficiently with others around the world by working in any given language.

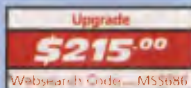
Goes beyond the benefits of Windows XP Home Edition with advanced capabilities designed specifically to optimise productivity using the latest advancements in the digital world.



Microsoft Visio 2002 Standard

Microsoft Visio 2002 Standard makes it easy to create professional business and technical diagrams! Communicate and visualize ideas, information, and systems, from process flows and hierarchies to network topologies, and

facilities planning or organisational charts. Assemble diagrams using predefined SmartShapes and position shapes using drawing aids that facilitate precise placement, alignment and shape connections. Easily add attractive backgrounds, borders, titles and color schemes to produce diagrams that make an impact!

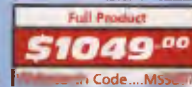


Microsoft Visio 2002 Professional

Powerful Design and Documentation Tools for IT Professionals

Whatever your IT project-inventorying existing networks, planning network expansions, Microsoft Visio® 2000 gives you the drawing and

diagramming tools you need for drawing and diagramming network infrastructures. Use it to get a clear picture of the systems you support today, start planning for the ones you'll need tomorrow, and communicate IT plans across your organization.



Microsoft FrontPage 2002

This version is the tool for the creation and editing of SharePoint sites for team collaboration. With its new Web components, improved interface, and enhanced wizards, FrontPage 2002 offers the quickest route to a professional-looking Web site for the rest of us; although the software now preserves HTML code, programmers will still steer clear of it.



Microsoft Publisher 2002

A business desktop publishing program designed for business users who are serious about creating their own marketing materials without the help of a professional designer. Since 1991, Microsoft Publisher has been the desktop publishing tool of choice for small businesses and home-based businesses wanting to create, quickly and easily, high-quality newsletters, flyers, brochures, Web sites, and more.



Windows 2000 Professional

Windows 2000 Professional is the best desktop and mobile operating system for businesses of all sizes. It's the easiest, most reliable Windows yet because it combines the reliability, security, and manageability of Windows NT Workstation with the best business features of Windows 98. In addition to removing unnecessary desktop items, Windows 2000 Professional introduces Personalised Menus, a new "smart" feature that adapts the Start menu to the way you work by showing you the applications you typically use most often.



MS Prof. Win 2000 NT4 UG
MS5596 **\$335.00**

MS Prof. Win 2000 Win95/98 UG
MS5597 **\$469.00**





UTILITIES

Norton Internet Security 1.0

Norton Internet Security for Mac 1.0 is the first Internet security suite to offer a comprehensive solution with protection against Internet threats; such as hackers, privacy intrusion and viruses. Combines Norton Personal Firewall for Macintosh 1.0, Norton AntiVirus for Macintosh 7.0, and iClean by Aladdin Systems, a desktop cleaning tool that sweeps away Web surfing tracks.

Mac



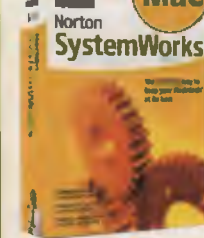
\$135.00

Websearch Code .NOR224

Norton SystemWorks

This essential suite features the following: Norton Utilities helps you repair and optimise disks, recover lost data, and prevent future problems. Norton AntiVirus finds and repairs infected files to keep your data safe and secure. Aladdin Spring Cleaning safely removes old programs and Internet clutter. Dantz Retrospect Express Backup copies files quickly and easily to a wide range of removable media.

Mac



\$185.00

Websearch Code .NOR227

Norton SystemWorks 2002 Professional

The complete problem-solving suite for advanced users and small businesses.

Norton Utilities™ 2002 optimizes your PC's performance. Norton CleanSweep™ 2002 cleans out Internet buildup. Norton Web Services™ - powered by ZDNet Updates - and Symantec Web Partners offer convenient online services. Norton Ghost™ 2002 provides fast system upgrading and backup. And WinFax™ Basic Edition lets you send, receive, and manage faxes.

* \$40 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Ghost Personal, Norton Internet Security.

XP Ready!

\$165.00

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\$125
after upgrade rebate!



Norton AntiVirus 2002

Protect your PC with the world's leading anti-virus software.

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- Reduced size of downloadable files
- Bootable CD for emergency
- "Undo" Functionality to Boot Sector repairs

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\$85.00

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Norton SystemWorks 2002

The smartest way to keep your computer working!

- Norton Utilities 2002 keeps your hard drive organized efficiently, diagnoses and solves a wide range of Windows problems.
- Norton CleanSweep 2002 improves your PC's by safely and easily cleaning out Internet buildup and other unneeded files
- Norton Web Services - powered by ZDNet Updates - gives you easy access to updates.
- Symantec Web Partners offer convenient access to a variety of online services for PC problem solving and system protection.

* \$30 rebate coupon in box for previous customers of Norton SystemWorks, Norton AntiVirus, Norton Utilities, Norton CrashGuard, Norton CleanSweep, Norton Internet Security.

XP Ready!

\$125.00

Websearch Code .NOR406

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after upgrade rebate!



Norton Internet Security 2002

Scans and cleans both incoming and outgoing email updates itself automatically over the Internet and defends against script-based viruses such as "Anna Kournikova" even between virus definition updates. Norton™ Personal Firewall blocks hackers' intrusions. Norton™ Privacy Control helps you keep email addresses and credit-card numbers secure and control which sites track your activities with Internet "cookies." Norton™ Parental Control keeps your children safe on the Internet. Lets you set up different Internet access privileges for each person in your household.

XP Ready!

\$115.00

Websearch Code .NOR413

\$335.00

Websearch Code .NOR418



Norton Internet Security Professional Edition

This integrated suite starts with Norton AntiVirus™, the world's most trusted anti-virus solution. Norton™ Personal Firewall defends against hackers. Norton™ Intrusion Detection automatically intercepts suspicious connections. Norton™ Productivity Control manages Internet usage by blocking selected sites and newsgroups. The User Access Manager helps you define individual Internet access privileges for everyone in your workgroup. Norton™ Privacy Control keeps your sensitive information private. And Symantec™ AntiVirus for Palm OS® protects your handheld devices.

XP Ready!

\$149.00

Websearch Code .189472



Norton AntiVirus Professional Edition

Norton™ AntiVirus Professional Edition has advanced data protection for both PCs and Palm OS® devices. It repairs common virus infections automatically, without interrupting your work. It scans and cleans both incoming and outgoing email and defends against script-based threats such as the "I Love You" virus. Symantec™ AntiVirus for Palm OS® provides essential virus defense for your PDA with a compact yet powerful application that's easy to install and keep updated via HotSync™. Norton™ AntiVirus Professional Edition also includes special software to help you protect and recover sensitive files.

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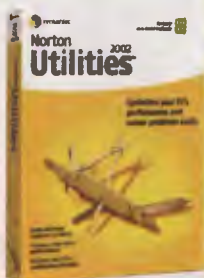


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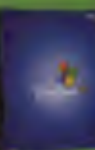
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Palm m105

Internet capable handheld PC. 8MB memory, advanced LCD with backlight, Palm OS software 3.5, Address Book/Date Book/Clock/To Do List/Memo Pad/Note Pad/Calculator. Infrared transfer - accept & transmit information from any other IR enabled Palm OS handheld.

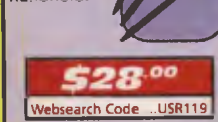


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Palm v Stylus

This convenient, affordable multi-pack lets you keep extra stylus at home, in the office, or in the car. Each handy pack contains 3 black plastic stylus for your handheld.



\$28.00

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VirusScan 6.0

Keep Hackers Out

McAfee VirusScan is the first anti-virus software that comes with an easy-to-use application that blocks hackers from gaining access to your system. McAfee VirusScan technology detects and removes all types of known viruses from any source including email attachments, Internet downloads, shared disks, CD Roms and even synchronization with your PDA.



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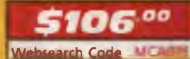
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Limited Offer Act Quick

\$30 cashback offer for McAfee VirusScan 6 and McAfee Internet Security. Valid 1st January 2002 - 31st March 2002. Via redemption from McAfee. Refer sticker on box. Conditions apply.

Internet Security 4.0

In today's highly wired environment, good anti-virus and firewall protection is essential for smart, safe computing. McAfee Internet Security is a comprehensive, easy-to-use, and automatic way to safeguard your PC, you, and your family from online threats. Install it for around-the-clock protection.



\$106.00

Websearch Code MCA000

QuickClean 2.0

Protect Your Privacy

Even when you empty your recycle bin, information about where you've been online and files you've recently deleted can be retrieved from your hard drive. However, with McAfee Shredder technology included, you can shred this information from your computer and cover your online tracks.



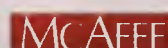
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Firewall 3.0

Get The Defense That Hackers Hate

Simply put, your PC is vulnerable without a firewall. A firewall prevents hackers from stealing your private information, blocks Trojan horses from taking control of your PC, and denies access to any number of dangerous intruders. McAfee Firewall makes it easy to put a protective barrier around your PC.



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VirusScan Pro 6.0

Every day you get online, you are exposed to more viruses and smarter hackers. For reliable protection, choose McAfee VirusScan Professional, a superior anti-virus product with even more features for comprehensive PC protection. Now you have one solution to eliminate viruses, quickly clean up your PC, permanently erase private information and more.



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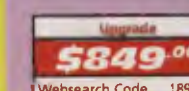
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Borland C++Builder 6 Pro

C++Builder 6 Professional provides a highly productive visual development environment for building Web and database applications for the Windows platform. C++Builder enables developers to easily integrate Web Services from across the Internet into their applications using the power and flexibility of SOAP, XML, and WSDL. C++Builder also includes CLX, the Borland Component Library for Cross-platform development. CLX enables the creation of cross-platform-ready applications that can be re-compiled and run on the Linux platform with currently planned releases of Borland C++ products for Linux. Gain access to data with database drivers supporting Borland InterBase, Access, Paradox, dBase, and MySQL.

Key Features

- Integrate Web Services into your applications
- Create cross-platform-ready solutions
- Quickly connect to your local databases
- Gain full control of the development and deployment of large projects
- Create powerful applications with a professional environment
- Benefit from accelerated code completion and CodeInsight
- Diagnose your errors on the spot with CodeGuard



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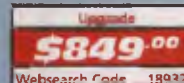
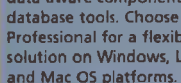
\$2079.00

Websearch Code ...189736

Borland JBuilder 6 Pro

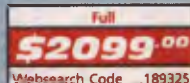
The leading Java database and Web development solution.

JBuilder is the leading cross-platform database and Web application development environment for the Java 2 platform. Rapidly build and deploy Web applications with servlets and JSP using JBuilder wizards and tools and the included Borland Enterprise Server, Web Edition. Maximize productivity with code refactoring, Javadoc tools, JDK switching, 250+ reusable JavaBeans with source, and advanced smart debugging. With presentation, transformation, and validation of XML documents, JBuilder helps you take full advantage of XML. Speed development of database applications with data-aware components and scalable database tools. Choose JBuilder 6 Professional for a flexible, open solution on Windows, Linux, Solaris, and Mac OS platforms.



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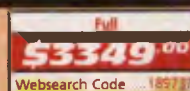
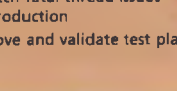
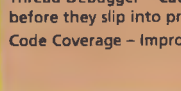
Borland Optimizeit Suite 4.11

Performance tuning for Java

A pioneer in Java performance tuning, the Optimizeit Suite delivers advanced, easy-to-use features and extreme scalability. The Optimizeit Suite integrates with leading application servers such as Borland Enterprise Server, and it provides accurate, relevant tuning data for even very large J2EE platform applications.

The Optimizeit Suite includes three integrated tools designed to help you efficiently pinpoint performance and reliability issues in Java code.

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- Thread Debugger - Catch fatal thread issues before they slip into production
- Code Coverage - Improve and validate test plans



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Business Planner Professional

For people who need to create winning and comprehensive business or marketing plans. The program steps you through the complete planning process section by section, it includes an on-line help system, proforma templates to build your plan quickly, in-built spreadsheet facilities and functions to allow "What if" scenarios. It also has an in-built, spellchecker, and comprehensive glossary of business and planning terms and financial ratios.



Marketing & Sales Planner Professional

For people who need to create winning and comprehensive marketing and sales plans. The program steps you through the complete planning process. It includes an on-line help system, proforma templates to build your plan quickly, in-built spreadsheet functions and facilities to allow "What if" scenarios. It also has an in-built, spellchecker and comprehensive glossary of marketing and sales terms.



Human Resource Value Pack

Has been developed with the small business operator in mind. It contains Human Resource Manager, a comprehensive HR planning and operations manager showing businesses how to recruit, train, develop and improve staff. It also contains hundreds of employee letters, employee agreements, employee forms, staff performance matrices, appraisal letters, hundreds of job descriptions and many more tools to meet the daily HR needs of the small businesses.



BUSINESS & LEARNING

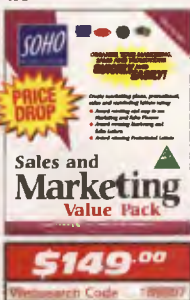
Business Letter Value Pack

Contains over 600 Marketing Letters, Employee letters and Agreements, Legal letters and Agreements Business 2 Business letters, Lead generation and relationship marketing letters. Never be lost for words with these award winning software products.



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Contains the award winning Marketing and Sales Planner and is complimented with over a hundred sample Marketing Letters and over a hundred Lead Generation and Relationship Letters. It will help drive you marketing strategy and sales campaigns, allow you to build winning customer relationships and loyalty programs and give you many sales and marketing techniques to build your business.



Business Starter Value Pack

Has been developed especially for new startup businesses or established businesses that want to overhaul their business planning processes, policies and procedures while revamping their communications with staff, suppliers and customers. It contains the award winning Business Planner Professional and award winning Business Writer Professional - an essential tool for all businesses.



SOHO Super Value Pack

• Marketing and Sales Planner • Marketing Letters • Lead Generation Letters • Human Resource Manager • Employee Letters and Agreements • Job Descriptions and Forms • Business Planner Professional • Business Writer Professional • Excellent value



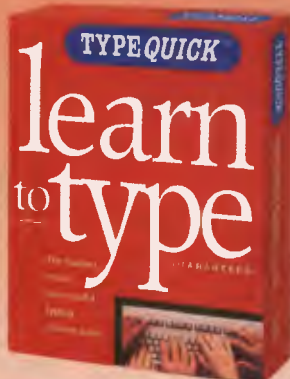
Business Writer Professional

The complete business writing and reference tool for home offices and small businesses. It contains over 600 proforma and sample customer and supplier business letters, marketing and sales letters, business documents and forms, staff performance matrices, business agreements, employee agreements, legal letters, sample contracts and many more valuable tools.



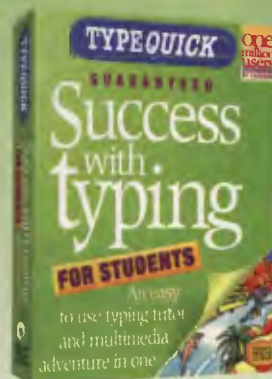
TYPEQUICK LEARN TO TYPE

TYPEQUICK LEARN TO TYPE is the quick and easy way to learn to touch-type with ten fingers. You are guided through the course of ten comprehensive and enjoyable lessons in a planned and logical sequence, that takes you on the shortest path to learning. Each lesson builds on the skills learned in the previous lessons and at each step you are encouraged and motivated to continue. Typequick alternates between speed practice and accuracy lessons to improve your skills in both areas. The program also generates frequent reports to show you how well you are progressing. All Australian Typequick has earned the reputation of being the fastest course with the highest success rate over the last twenty years.

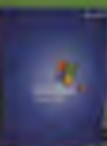


TYPEQUICK FOR STUDENTS

TYPEQUICK FOR STUDENTS is an animated, multimedia adventure designed to keep students entertained for the ten hours it takes to learn to touch-type with ten fingers. The program follows a cool koala character called 'Kewala' as he travels around Australia visiting new places and meeting new characters. The student is guided through the logically-planned and structured course that has short lessons and easy paragraphs of text. The compelling, interactive, multimedia story and text exercises are so much fun, students have no trouble finishing the course. Records are kept for each lesson making assessment easy. Recommended by teachers and loved by children.



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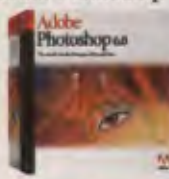
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Adobe Photoshop 6



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Adobe Design Collection*

The Adobe Design Collection contains four leading-edge design and publishing applications in one fully integrated suite. Together these programs give you everything you need to create and produce professional documents across media.

Includes:

- Adobe InDesign
- Adobe Photoshop
- Adobe Illustrator
- Adobe Acrobat



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Adobe Publishing Collection

The Adobe Publishing Collection brings together four powerful applications for business, education and small office/home office professionals. These complementary applications help you create professional looking communications for print and the Web.

Includes:

- Adobe PageMaker
- Adobe Photoshop
- Adobe Illustrator
- Adobe Acrobat



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Adobe Web Collection*

The Web Collection is a comprehensive, tightly integrated software suite that gives you the power to design extraordinary still and interactive Web graphics, optimize those graphics for efficient downloading, and build dynamic Web sites that support the latest technology and standards.

Includes:

- Adobe GoLive
- Adobe Photoshop
- Adobe Illustrator
- Adobe LiveMotion



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Websearch WINADO209
Websearch MACADO210



Adobe Digital Video Collection

Adobe Digital Video Collection delivers professional tools for putting your ideas into motion. Whether you produce projects for film, multimedia, video, or the Web, you'll gain the creative control you need to achieve superb results.

Includes:

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- Adobe Photoshop
- Adobe After Effects
- Adobe Illustrator



\$3099.00

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Websearch MAC189624

Collections which include Illustrator 9.0 or InDesign 1.5 qualify to receive a free upgrade (until new version ships) to Illustrator 10 & InDesign 2.0. * To claim your FREE Upgrade, please contact Adobe Customer Service on 1300 550 205. Conditions apply.

Adobe FrameMaker 6.0

The multichannel technical publishing solution for print and Web, delivering a comprehensive solution for publishing long, content rich documents across multiple channels. Whether publishing to the Web, CD-ROM, or print, work more productively than ever before. Improved book-building features including book-wide commands, and now gives you the power of Quadralay Web Works Publisher Standard Edition software for enhanced HTML and XML capabilities.



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Adobe PhotoDeluxe 4.0 Home Edition

With Adobe PhotoDeluxe Home Edition for Windows, it's easy to bring photos into your computer, organize them in albums, and make improvements. Then you can have endless fun creating personalized photo projects to share with family and friends in print, via e-mail, or on the Web.

PhotoDeluxe comes to you from the makers of Adobe Photoshop 6.0, the industry-standard image editing tool for professional designers.



\$145.00

WebsearchADO280

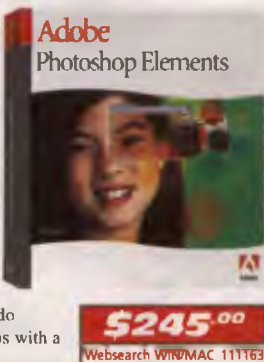




Adobe Photoshop Elements

Creating and editing digital images for print and the Web has never been easier

Adobe Photoshop Elements software offers unique features designed specifically for amateur photographers, hobbyists, and business. Learn sophisticated Photoshop editing techniques with Recipes that can be expanded via the Web. Merge multiple images into seamless panoramas with Adobe Photomerge technology. Create eye-catching compositions of images, text, and graphics. Automatically create drop shadows, bevels, glows, and realistic 3D text and buttons. Visually preview an image and quickly apply creative filters. Easily view your most recent edits and undo multiple steps with a single click.



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Adobe Acrobat 5.0

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Whether you create business plans, spreadsheets, graphically rich brochures, or Web sites, Adobe Acrobat 5.0 software lets you convert any document to an Adobe Portable Document Format (PDF) file. Conversion is as easy as a click within your Microsoft Office toolbar (Windows only). Your team can work smarter by electronically adding comments and signing documents without leaving their Web browsers. Easily secure your documents with password protection. Anyone with the free Adobe Acrobat Reader™ software can open Adobe PDF files across a broad range of hardware and software, and the files will look exactly as intended with layout, formatting, and images intact.

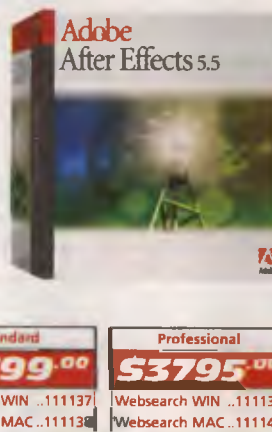


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The essential tool for motion graphics and visual effects

5.5 software provides complete creative control so you can efficiently produce motion graphics and visual effects for film, video, multimedia, and the Web. Work in a 2D or 3D compositing environment while you precisely control the position and animation of layers. Animate layered Adobe Photoshop and Adobe Illustrator files and import Adobe Premiere projects.



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WEB, DESIGN & PUBLISHING

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The TLP evaluates each transaction separately, assigns it a point value, and applies the volume discount level that is appropriate to the size of each transaction. Each eligible Adobe product counts for either one or two points, and points accrue equally to the purchase of new licenses, the upgrade of previously acquired licenses, or the enrollment of an eligible license in the Maintenance program. The TLP is open to corporate, government, education, and small-business customers.

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Adobe GoLive/LiveMotion Pack

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Rapidly animate, develop, manage, and deploy dynamic, interactive sites for the Web and wireless devices with the Adobe GoLive /LiveMotion Pack. Take advantage of LiveMotion software to create Macromedia Flash(SWF) animations with ActionScript and to streamline your design work flow with automation scripts. Then develop professional Web sites with GoLive software, and easily manage them with the new integrated Adobe Web Workgroup Server.

Optimize industry standard assets such as Adobe Photoshop, Adobe Illustrator, and SWF files, and connect your site to a dynamic database or an e-commerce engine. With the Adobe GoLive/LiveMotion Pack, you can efficiently create a powerful, dynamic Web presence.



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Adobe Illustrator 10

Adobe Illustrator 10 software defines the future of vector graphics with groundbreaking creative options and powerful tools for efficiently publishing artwork on the Web, in print, everywhere.

Produce superb Web graphics using symbols and innovative slicing options. Explore creative ideas with live distortion tools. Publish graphics in record time with dynamic data-driven graphics and other productivity features.



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Adobe Premiere 6.0

The essential tool for professional video editing

Adobe Premiere 6.0, a stunningly simple and powerful professional video editing tool. It delivers an essential set of tools for creating video for the Web, DVD, CD-ROM, and videotape. With robust DV support, direct export to all the leading Web streaming-video formats, and enhanced professional tools.



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Adobe InDesign 2.0

InDesign 2.0 integrates tightly with Adobe Photoshop, Adobe Illustrator, and Adobe Acrobat. Plus, it frees you to be more creative by delivering intuitive features that reduce elaborate design tasks to a few quick steps. When you're ready to print, the results are precise and reliable. InDesign 2.0 also makes it easy to move beyond print with built-in support for publishing pages anywhere.



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Websearch MAC ..ADO208

Adobe PageMaker 7.0

Adobe PageMaker 7.0 software is the ideal page layout program for business, education, and small- and home-office (SOHO) professionals who want to create high-quality publications such as brochures and newsletters. Get started quickly with templates, graphics, and intuitive design tools; work productively across Adobe applications.



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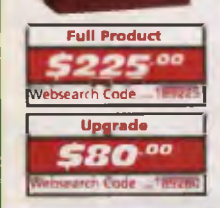
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The solution for developing magnetic destination content and interactive media on the Web, CD/DVD-ROMs and corporate intranets - including 3D entertainment, interactive product demonstrations, and online learning applications, high performance multi-protocol, RealMedia support, and Shockwave Multi-user.



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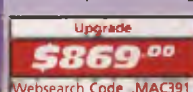
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Go from concept to completion faster than ever before! With Dreamweaver, Fireworks and Flash, Macromedia makes it easy to build a world-class Web site. Tight product integration lets you efficiently design, edit and optimise graphics for the Web in Fireworks, then seamlessly integrate with Dreamweaver to produce and manage your site. Finally, use Flash to add animations, interactivity and sound to produce a high-impact site that plays back smoothly, even over low-band width.



Macromedia Dreamweaver 4

Create a professional web site whether you prefer to work with familiar visual layout tools or demand the control of a robust text-editing environment. Macromedia user interface makes it easy to create and manage your site, while robust text-editing environment gives hand-coding professionals the control they demand.



Macromedia Fireworks 4

Create, edit and animate Web graphics with a complete set of bitmap and vector tools. Add advanced interactivity and optimise images in a robust, professional environment. Use configurable export controls to export images and interactivity into Dreamweaver and other HTML editing environments. Launch and edit graphics between Dreamweaver, Macromedia Flash™ and all Macromedia Products for efficient workflow.



Macromedia Flash 5

Produce engaging experiences that attract and excite Web users. A familiar and intuitive interface makes it easy while powerful scripting, input forms, and server-side connectivity allows developers to create advanced web applications. Integrated web production through connectivity with Macromedia Dreamweaver, Macromedia Fireworks and Macromedia Freehand.



Macromedia FreeHand 10

FreeHand 10 offers graphic designers unsurpassed productivity features like Master Pages and the new Macromedia User Interface plus sophisticated vector-based illustration tools like Contour Gradients and Symbol-based Brush Strokes for easily creating advanced patterns and designs. Create once, then publish across multiple mediums including, print, Web and beyond.



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With the Studio DV range you can take Hollywood home!

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Studio DV Clip
Studio DV hardware
and Studio 7 SE

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Websearch Code ...PIN032

Studio DV ver 7
Studio DV hardware and
Studio 7 with HFX

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Studio DV + Studio DV
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output and Studio 7 with HFX

\$460.00
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MULTIMEDIA

Pinnacle Studio ONLINE

Share your video on the WEB!

Edit your videos using this USB to Video cable, add titles and sounds with the Studio software. Once finished, by the click of a button, upload your video to the Studio online web site and allow your friends and family to view them thanks to Microsoft Media technology (MPEG 4). No need for download then just click on the link and the video will be streamed to your desktop wherever and whenever.



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Pinnacle Express

Express is a new generation of software that will allow you to convert your home movies filmed with a Digital Camcorder onto a CDR or even a DVD R/RW. Create Video CDs or DVD Videos-both compatible with most home DVD Players. Capture your video from your DV camcorder.

Create CDs or DVDs for your DVD player. Detects each scene on your DV tape and create an interactive menu that can be customized up to one hour onto a CD at VHS quality (VCD), 1/2 Hour at SVHS quality (SVCD) or 15 minutes at DVD quality (mini DVD onto CD). Compatible with most DVD players (all JVCs and Philips are 100% certified) (incompatible with early DVD players that does not support CDR Media) Requires a CDRW or DVD R/W, and a Firewire port to connect to your camcorder.



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Pinnacle Studio Deluxe

Pinnacle introduces the first and only Analogue and Digital editing product for under \$1000 AU

- Capture, edit and output your videos from and to analogue and digital video sources
- Edit your videos with Pinnacle Studio 7 software
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- Create DVDs, VCDs, SVCDs with Pinnacle Express
- Comes with a break out box for easy connectivity
- Many new transitions with Hollywood FX Plus for Studio
- Compatible with XP, Windows 2000, Windows 98 and Me



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Pinnacle Studio 7

Simply the best movie-making software available today. Made by the same people who've won seven Emmy Awards creating video-editing gear for the Hollywood pros. Studio 7 lets you turn your home movies into Hollywood masterpieces. Now with Studio 7.0 software, anyone with a FireWire card or other PC video capture hardware can take advantage of its great features to make amazing video. Software only.



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P PINNACLE
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Pinnacle Studio DC10+version 7

Pinnacle Studio DC10+ version 7 and your creativity are all you need to turn your home movies into masterpieces. Studio DC10+ version 7 is a complete Solution combining award winning Pinnacle Studio video editing software, with a Hi 8 and VHS video capture and output board. The Pinnacle Studio software combines a simple drag and drop interface with professional features, like fast/slow motion, custom audio, over 100 transitions including Hollywood FX 3D effects, advanced color correction, contrast and brightness control, and more.



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Pinnacle DV 200

Pinnacle DV 200 the fastest DV editing card

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- Pinnacle DV2 Codec for near real time or instant editing (expendable technology)
- Export to VCD, SVCD, Web Streaming
- Adobe Premiere 6 Full version
- Adobe Photoshop LE
- Pinnacle Impression and Title Deko
- Hollywood FX Copper and Alpha Magic



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P PINNACLE
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DV500 PLUS - Gold Edition

DV500 PLUS is the ONLY real-time editing solution which takes advantage of features such as:

- Real-time multi-track audio mixer
- Real-time 16:9 widescreen effects, transitions and titles
- TitleDeko RT with video output for title creation previews
- Real-time image correction for colour and brightness controls
- Export to VCD and SVCD
- Adobe Premiere 6
- Adobe Photoshop LE
- Pinnacle Impression DC-Pro
- Pinnacle Hollywood FX Copper
- Pinnacle Hollywood FX Alpha Magic
- Pinnacle Instant Video Technology



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Pinnacle Studio VCD

Turn your PC into a Video CD Recording Station. Studio VCD allows you to back up your videos up to 80 minutes onto a CDR or CD RW disc.

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- DVD Player that can read DRAW
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- Easy to use trimming tool for recorded MPEG streams using a RealTime MPEG 1 encoder recording application
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- VHS & SVHS Inputs
- VCD Encoder
- Studio Demo CD
- Nero 5 Burning ROM



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WordPerfect® Office 2002 – Professional Edition. Includes advanced word processing, spreadsheets, presentations, an e-mail client and address book, Paradox 10 and Dragon Speech Recognition Software.

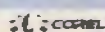


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Corel Procreate KPT Effects
MAC Corel Procreate KPT Effects
Corel Web Master Suite
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CorelDRAW 10

CorelDRAW 10, professional layout and illustration software specifically designed for Mac OS X. With a wide range of content creation tools, innovative vector and raster effects, high-end output and colour management features, and Web capabilities, it integrates into the professional's workflow with ease.



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*Corel Draw & KPT 6 promo is only available for PC versions of Corel Draw 10



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Corel PHOTO-PAINT 10

Corel PHOTO-PAINT 10 is comprehensive image-editing and painting software specifically designed for Mac OS X. With intuitive tools for image manipulation and transparency effects, enhanced text handling features and professional colour management, it integrates into the professional's workflow with ease.

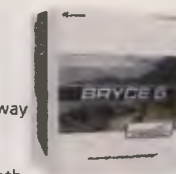


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NEW



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KPT 1.5 Vector Effects

Create amazing special effects once thought virtually impossible. Create dramatic transformations and stunning new illustrations quickly and intuitively with plug-ins such as 3D Transform, ShatterBox, Shadow-Land, WarpFrame and more. Includes over a dozen plug-ins to dramatically extend the creative possibilities of your work.



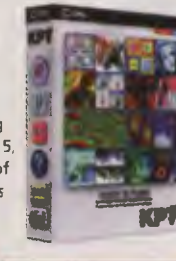
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KPT 5

The No. 1 Photoshop®-Compatible Plug-Ins

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KPT 6

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KPT® 6 is an extraordinary collection of image filters that produce unlimited, spectacular effects for print and the Web. KPT 6 includes 10 plug-ins that extend and enhance the creative possibilities of Adobe Photoshop and compatible products.



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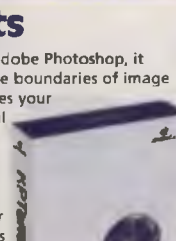
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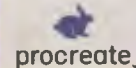


KPT effects

A natural addition to Adobe Photoshop, it dramatically extends the boundaries of image editing. Hyper Tiling tiles your images into geometrical shapes. Lightning delivers a new level of realism by letting you control every aspect of a lightning bolt. Scatter lets you spread particles over an image to create intricate patterns and textures.



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KnockOut 2

Part of the procreate™ line of software, KnockOut 2 lets you preserve fine image details that were once impossible to mask precisely. It's an ideal plug-in for Adobe® Photoshop®, speeding up the design process and helping you capture complex imagery such as hair, smoke, shadows, glass, liquid and ice.



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iGrafx FlowCharter 2000 Professional

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Everything you need for technical illustration, image editing and web graphics

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Wacom Graphire2 4x5 USB Tablet

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Graphire2 bundles Corel Painter Classic and Expression 2 Lite. Expression 2 Lite is Drawing software that allows you to reproduce a variety of brush stroke effects, including an Animation stroke brush, Design stroke brush and Water stroke brush effect.

System requirements:

PC - Win 98/2000/ME and working USB port, CD-ROM drive, and colour monitor.

Mac - iMac with Mac OS 8.5 or later or PowerMac with Mac OS 8.0 or later with USB port, CD-ROM drive, and colour monitor.

Includes Pen only. Mouse sold separately.



\$165.00
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Sapphire Blue
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Websearch Code ...WAC070

Silver
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Graphire 2 4x5 With Mouse
\$215.00
Websearch Code ...WAC039

Picture Publisher 10 Digital Camera Edition

Manage, correct, enhance, create, and publish your digital pictures quickly and effectively with Picture Publisher Digital Camera Edition -- the perfect companion for your digital camera. Affordable yet powerful, Picture Publisher is ideal for small businesses and freelance artists that need to create high-impact graphics for print, presentations and the Web. As an essential component of any digital darkroom, you can use one-click macros to enhance and correct your pictures, apply one of many artistic special effects to turn your photo into a work of art or use PhotoAlbum to effectively manage, enhance and batch process your photos.



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Picture Publisher 10 Professional is the premier easy to use solution for professional image processing and management from start to finish. Enhance pictures using powerful editing tools or get creative with extensive special effects, wizards, and macros. Fully enabled 64 bit CMYK and 48 bit RGB image resolution support, alongside the Kodak Color Management System, ensures that your images are always of the highest quality. If you're publishing to the Web, Picture Publisher has a complete toolset to optimize your images for your Web audience. Also included is the new PhotoAlbum, featuring helpful batching and indexing tools that make image management easier and faster.



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PartitionMagic 7.0

PartitionMagic allows you to create, resize, merge and convert partitions on your hard drive without destroying data. Award-winning PartitionMagic is the world's leading hard-drive partitioning software for PC enthusiasts.

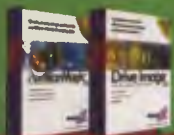
Features:

- Merge NTFS partitions
- Undelete a deleted partition from rescue disks
- Support for Windows XP
- Partition hard drives as large as 80 GB
- Access and partition external USB drives

Other Powerful Features:

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- Easy, step-by-step wizards help you perform partitioning tasks
- Preview the effects of partitioning before implementing anything
- Safely manage multiple operating systems
- Convert from one file system or partition type to another without losing data
- Supports FAT, FAT32, NTFS, and Linux ext2/swap file systems

PartitionMagic 7.0 & Drive Image 5.0



BUNDLE PACK
\$179.00
Websearch Code ...189579



Upgrade
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Full Product
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Drive Image 5.0

PowerQuest's Drive Image 5.0 - the answer for protecting all the valuable data on your hard drive, including disaster recovery and backup for system upgrades.

- QuickImage Windows interface which lets you schedule regular, automatic backups of your entire hard drive or individual partitions.
- PowerQuest DataKeeper for constant monitoring and automatic file backup.
- SmartSector technology to reduce the time it takes to create and restore data.



Upgrade
\$99.00
Websearch Code ...POW055

Full Product
\$139.00
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DeployCenter 5.0

PowerQuest DeployCenter 5 (formerly Drive Image Pro) offers simplified system deployment and upgrades. Deploying or upgrading computer systems can be extremely time consuming and costly. DeployCenter lets you take care of these critical issues to help ensure your organisations success?

- Remotely manage multiple clients
- Deploy or upgrade Windows workstations
- Create a standard, customized work environment for faster deployment of new computers
- Easily introduce new systems to the network
- Automatically distribute and install new software or upgrades



Upgrade 10 User
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10 User
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CRM OFFICE/APPS

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Connects any desktop to your Wireless Network (requires Belkin's F5D6020z card).



\$89.00

Websearch Code189752

Belkin USB Wireless Adapter

Connects any USB equipped PC or Laptop to a Wireless Network.



\$269.00

Websearch Code189453



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Websearch Code189748	
5 User	\$1599.00
Websearch Code189743	

Legrand CRM

Legrand CRM Software allows you to create stronger business leads and consolidate your existing relationships. It provides the complete business picture, enabling you to track day to day activities, manage staff, customer relationships, sales opportunities, marketing campaigns and much more. Best of all it is simple to use and has been developed especially with the needs of small to medium sized businesses in mind.

Legrand Software will drive your business to new levels of growth that will really impact on your bottom line.

With Legrand CRM you are able to:

- Manage new and existing business relationships, key activities and documents
- Plan, produce and track marketing campaigns and then evaluate the results
- Administer sales opportunities by personnel, territory or product
- Maintain a calendar of appointments, activities and future strategies

Create, develop and make the most of client mailing lists and much, much more

With Legrand CRM Software, users can instantly be up-to-date on all communications between staff and customers, see precisely what their needs are and be in a position to quickly take advantage of any opportunities.



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www.iswh.com.au



MAUS Portfolio Management Pack

Includes: • MAUS Stockmarket Plus with FREE 28 DAY DOWNLOADS



\$169.00
Websearch Code189328

MAUS Business Planning Pack

Includes: • MAUS Masterplan & MAUS Project Planner + FREE Business Letters (RRP \$59.95)

The first 15 orders will receive a FREE Job Match Employee Assessment Report valued at \$175



\$335.00
Websearch Code130123

MAUS HR Toolkit

Includes: • MAUS Performance Review • MAUS Job Descriptions • MAUS Employee Manual with FREE Copy of Business Letters (RRP \$59.95) and FREE Online Assessment Report (Valued at \$175.50)

The first 20 orders will receive a FREE Business Letters & Job Match Employee Assessment Report valued at \$230.95



\$499.00
Websearch Code129879

Project Planner

Forget complicated project management software that is as difficult to understand as it is to operate, complete important activities on time and under budget with this user-friendly application which tracks costs, labour required, available resources and deadlines. View instant reports and graphs, including easy to use Gantt charts and actual vs Budget comparisons.



\$189.00
Websearch Code ...MAU018

MasterPlan

Award Finalist in the Telstra Small Business Show Software awards

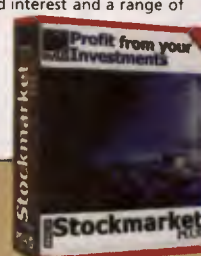
For people who need a winning, professional Business or Marketing Plan, MasterPlan's simple step-by-step question and answer format enables you to construct full financials, text and graphics in no time at all! Sample plans, real life examples and a unique financial wizard will ensure you prepare a perfect plan every time.



\$189.00
AWARD FINALIST
Websearch Code129545

Stockmarket Plus v4

MAUS Stockmarket Plus is an AWARD FINALIST in the Channel 9 SMALL BUSINESS SHOW SOFTWARE AWARDS and one of the biggest selling personal investment software tools in Australia. The application is a 4 in 1 Investment Software Tool. It handles shares, options, warrants, property, managed funds, fixed interest and a range of other investments with ease!

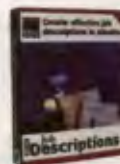


\$175.00
AWARD FINALIST
Websearch Code ...MAU009

BUSINESS

MAUS Job Descriptions

Create clear, concise job descriptions in minutes. Choose from over 3,500 customisable job descriptions selectable by job title or industry. Use the question and answer format to address physical and educational requirements, work environment, qualifications and supervisory duties.



\$189.00
Websearch Code ...MAU005

MAUS Employee Manual

Create a handbook encompassing all of your organisations policies and procedures. The application covers issues such as holiday entitlement, employee benefits, employment contracts, recruitment, termination and much more through a simple to use question and answer format.



\$189.00
Websearch Code ...MAU011

Performance Review

At review time you can now create accurate and customized reviews in no time at all. This software package allows you to choose from dozens of performance criteria and then use the grading system to rank your employee in each area. Also supports your ratings with clear text. Includes expert HR advice.



\$189.00
Websearch Code ...MAU004

Customer Relationship Manager

Capture the right information from your customer, combine that with your sales information and analyse your database and formulate new strategies to direct more accurate and profitable campaigns. Accesses all data from MYOB, QuickBooks and ALL other major accounting packages.



\$249.00
Websearch Code ...MAU027

Type Right

The fast new way to increase typing speed and accuracy. It takes you through the typing process step by step with fun tutorials and easy exercises. Best of all, this application is designed specifically for people who are using keyboards and computers, so its approach is practical and relevant to today's office environment. Basic keyboard skills can be attained in 4-6 hours.



\$89.00
Websearch Code ...MAU029

MAUS Health & Safety Planner

This application provides businesses with the necessary tools to develop an Occupational Health and Safety (OH & S) Management Plan. Avoid potentially costly employee litigation by improving safety standards and systems within your workplace.



\$189.00
Websearch Code129968

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ACCOUNTING

MYOB

Move your business forward

MYOB Pocket Accounts

MYOB PocketAccounts, a handheld sales and time billing program that helps businesses with a mobile sales or consulting force improve their efficiency and cash flow.

MYOB PocketAccounts runs on a Palm OS(r) device and links seamlessly with MYOB accounting software on the desktop, allowing users to synchronise their entire day's data at the push of a button.



MYOB RetailManager v5 Retail point-of-sale management

Designed specifically for the Australian retail environment, MYOB RetailManager replaces the cash register with a point-of-sale system that streamlines store operations, manages sales, stock, GST, staff and customers, and produces critical reports across a wide range of business activities.

- Fast, flexible sales processing
- Simplified stock control
- Streamlined stocktaking procedures
- Easy to use and understand
- Retail-specific business analysis
- Stand alone or integrate with select MYOB software



MYOB accounting and business management software is trusted by over 300 000 Australian businesses.

Made in Australia for Australian business conditions.

MYOB software is written and produced in Australia for Australian business conditions, and is designed to take the stress and complexity out of managing your business, the GST and the BAS.

The complete business solution

MYOB provides a range of support options to help you make the most of your MYOB software, including 30 days of free introductory telephone support, access to web-based Support Notes, an optional year-round support program, and a range of training options to help you or your employees get up to speed.

The business software family that'll always be there for you

Whatever the size of your business, MYOB offers a range of accounting and business management solutions to suit your needs. And if your business situation changes – through growth, legislation changes or technology advances – MYOB will be there for you.

Go direct to www.iswh.com.au/myob

MYOB FirstAccounts v3.5

*Basic accounting and business management
Ideal for tradespeople!*

FirstAccounts is a basic first accounting system for small owner-operators who need to keep on top of their accounting obligations and want to add a business management edge – but without the expensive overheads of a full back office.

It's easy to understand and full of features that keep the amount of time you spend on your accounts to an absolute minimum. You don't get lost in the details, and you don't get tied to a desk – you just process your accounts and get straight back to running your business.

- Cut back your paperwork
- Streamline your accounts
- Understand your business
- Track your GST



\$199.00

Websearch Code ..MY0035

MYOB Accounting v11

Integrated business management

MYOB Accounting is for businesses that need to streamline accounts procedures and would benefit from improved inventory management, better management of customer and supplier relationships, and advanced business reporting.

- Streamline accounts procedures
- Comprehensive business management
- Powerful inventory management
- Contact management



**Upgrade
\$209.00**

Websearch Code ..MY0041

**Full Product
\$385.00**

Websearch Code ..MY0038

MYOB Accounting Plus v11

*Business, payroll and time management
For employers*

MYOB Accounting Plus is for businesses that need to streamline accounts procedures and would benefit from improved inventory management, better management of customer and supplier relationships, advanced business reporting, and automated payroll or time billing.

Fully integrated payroll

Process pays, PAYG and employee entitlements with a few mouse clicks – pay by cash, cheque or electronically.

Professional time billing

Automatically track the costs and charges of every business activity.



**Upgrade
\$269.00**

Websearch Code ..130902

**Full Product
\$519.00**

Websearch Code ..MY0080

MYOB Premier v5

Powerful multi-user business management software

MYOB Premier is for businesses that need to streamline accounts procedures, whether through simplifying complex inventory issues, running an automated payroll, time billing, accessing advanced reporting or increasing productivity with multi-user access.

Premier's combination of productivity enhancing features will appeal to any business that has complex inventory requirements, works with more than one currency, or requires multi-user access.

"...you'll find it to be the most affordable and user-friendly multi-user software available, as well as coming with fantastic support, training and documentation."

- Australian PC World, June 1999



\$999.00

Websearch Code ..MY0040

Crystal Reports 8.5

Powerful Information Delivery for the Web

With Crystal Reports you can easily deliver rich, interactive content from virtually any data source, publish it to the Web, and integrate it within applications.

Powerful Content Creation

Crystal Reports allows you to create rich content from virtually any data source including XML, OLAP or relational. Add charts, drill-down, alerting, parameter prompts, and hyperlinks and turn reports into compelling, interactive documents or web content. And it's simple to deliver information the way you want in a variety of formats, including XML, DHTML, PDF, RTF and Microsoft Excel.

Flexible

Developer tools for Web and Windows developers with comprehensive support for development languages makes Crystal Reports the essential reporting tool for database applications. Build and freely distribute client-side applications that incorporate rich interactive reports, or create scalable client/server applications starting with the included 5 concurrent user license.

Web Publishing System

Rapidly deploy your reporting solution to the web with our powerful new web publishing system for easy information sharing. As a special offer to retail customers, Crystal Reports Developer and Professional editions include 5 concurrent users of Crystal Enterprise Standard free. It is the fastest way to get your high-quality interactive Crystal Reports out to users across the enterprise. The 5 concurrent users of Crystal Enterprise Standard received free is not accumulative. You may not increase the number of promotional CALs by purchasing further copies of Crystal Reports 8.5.

Available in three editions

- **Developer** - Integrate flexible, high performance reporting into web and Windows applications.
- **Professional** - Design interactive, actionable content and deliver it to users across the enterprise.
- **Standard** - Create presentation-quality reports in a familiar PC environment, including Microsoft Office.

SPECIAL OFFERS!!

Upgrade Advantage Maintenance promotion

*All customers who purchase Crystal Reports 8.5 Professional or Developer editions with upgrade advantage maintenance will receive this **FREE PICNIC BACKPACK**.

Developer promotion

Purchase Crystal Reports 8.5 Developer edition full product or upgrade with upgrade advantage maintenance to receive four new add-ons.

New COM driver - This add-on allows you to write custom data access drivers using any development language that can create standard DLLs. Encapsulate business logic, perform complex calculations or simply abstract your data, then use the power of Crystal Reports for formatting, presentation and delivery.

New XML data access driver - This update to the XML data access driver improves support for XML sources, including accessing multiple XML data sources in a single report.

New VCL - supports Delphi 6.

New Excel export - now what you see in Crystal Reports is what you will see when exporting to excel with its improved images and colouring. It also supports data-only export.

"To receive special offers, customers must register their eligible product with Crystal Decisions"



Crystal Analysis Professional

Powerful analysis for the Web

Crystal Analysis Professional provides easy-to-use interactive high-speed analysis for Microsoft SQL Server (OLAP) Services. It makes multi-dimensional data easy to understand, use and deploy - opening the power of interactive analysis to all.

Crystal Analysis Professional allows end users to easily create snapshots of multi-dimensional OLAP data, stored in MS SQL Server Analysis (OLAP) Services, including rich visualization techniques such as charting, which are then compiled into Excel-style Briefing Books for guided navigation and can be deployed to the Web. It is designed for ease-of-use, with a point-and-click design environment, requiring that interactive report designers have some knowledge of the data but little else.

The result delivers better value to organisations, as more people will now be able to access information from multi-dimensional OLAP data, and gain better insights to help decision-makers impact business performance.



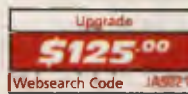
DATABASE

Paint Shop Pro 7

Perfect for Digital Photography

For the traditional digital photographer and the novice user, Paint Shop Pro 7 incorporates several new intelligent photo enhancement features:

- Automatically adjust colour, brightness, and saturation for professional results
- Remove red-eye with one click - it works on all eye colours and even on animals!



Nero 5

The World's best CD recording software has got even better!

Fast, reliable and user-friendly, Nero is the best companion you and your CD recorder could ever ask for. Driven by the idea of making the software you really want, Nero has evolved into a complete solution to all your CD recording needs.





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BUSINESS

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Qudos Business Planner

A business plan is essential to raise finance & ensure business success

Australia's brightest business planning software - Qudos Business Planner enables you to develop a first-class business plan quickly and easily - using your familiar desktop applications - Microsoft Word and Microsoft Excel.

Qudos Business Planner offers you an unbeatable combination - the knowledge of professional business consultants, ready-made template documents, the comfort of working with your familiar applications software - and all at a very competitive price.

Includes a wide range of sample plans with matching financials - you simply enter your figures where indicated to automatically generate impressive tables and colourful charts. A series of Training presentations illustrate relevant topics.

The User's Guide explains important issues in plain English, and guides you through the development of your business plan.



\$149.00
Websearch Code: TQA014

Quality Manager - Toolkit

The cost-effective way to develop your own ISO 9000 Quality System!

Provides the tools you need to develop your own quality system. Includes sample policy manuals, procedures, forms, job descriptions and letters - ready for instant use or easy customising in MS Word 97 or above. A series of Multimedia Training Presentations, Case Studies, Guide Book, handy ISO 9000 Quick Reference Guides and checklists make developing and implementing your system even easier. Just add your unique knowledge of your own business!

KEY BENEFITS

- Low price - only a fraction of consultants fees
- 3 times Finalist - Small Business Show Software of the Year
- For updating a system or creating a new one
- Work at your own pace - with your familiar word-processor
- Can be used by ANY size or type of business
- NEW version for ISO 9001:2000

SAVE \$70!
Special Bundle - Quality Manager Toolkit + Database

QM Bundle
\$460.00
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QM Toolkit
\$145.00
Websearch Code:TQA009



Quality Manager - Database

If you want to...

- Efficiently control a quality / business management system from your PC
- Reduce paperwork and administration time
- Integrate quality, safety, environmental and other systems

DOCUMENT CONTROL: Approval, issue and revision of documents. Launch files for display or editing in any Windows application.

AUDITS: Schedule, plan and record audits on any subject.

IMPROVEMENTS: Record suggestions / nonconformances / complaints. Plan Corrective and Preventive actions. Powerful data query facilities help you to identify trends and plan improvement.

MEETINGS: Schedule, plan and record minutes of meetings on any subject. Create agendas for any meeting type you choose.

HUMAN RESOURCES: Maintain personnel details and training history. Plan and record Employee Performance Reviews with user-definable objectives and rating system.



Standard Edition
\$385.00
Websearch Code:TQA010

Network licences also available

Gold Edition

For the dynamic organisation, this even more powerful option includes:

AUTO-EMAIL FACILITY: to keep colleagues informed of issues raised, document changes, action required, audits and meetings.

RISK ASSESSOR: Extra to help you identify hazards, quantify them, plan and monitor control measures.

BENCHMARK: Extra module for performing benchmark exercises, vendor assessments, customer surveys, and much more.

SET OF SAMPLE PROCEDURES: provides most of those required by ISO 9001:2000, and can easily be customised using MS Word

E-BOOK: 'Guide to Quality Management'
A full copy of the electronic book that provides a real insight.

FREE LOGITECH QuickCam Express
valued at \$95 with every purchase of Quality Manager Gold Edition.



Gold Edition
\$759.00
Websearch Code:189327

Meeting Manager

Plan, manage and record your meetings more effectively!

Meetings play a vital part in running any modern organisation. Successful outcomes from meetings depend on them being well organised. Qudos Meeting Manager will help you to quickly and effectively plan, schedule and record any business meeting. Includes sample default agendas for various meeting types. For regular meetings, the 'Fill' tool lets you reuse previous minutes and simply enter any changes.



\$49.00
Websearch Code: TQA015

OfficePLUS!

MS Office is the world's most popular office suite - yet few of us fully utilise it. Qudos OfficePLUS! will help any business to make more productive use of Microsoft Office 97 or above - with hundreds of ready-made solutions. Includes sample Word letters and forms, Excel workbooks, PowerPoint presentations, Access databases, voice, music and sound files. Qudos OfficePLUS! is a 'Must have' product for any business user of MS Office.

NEW version with even more letters, forms and workbooks.



\$49.00
Websearch Code: TQA011

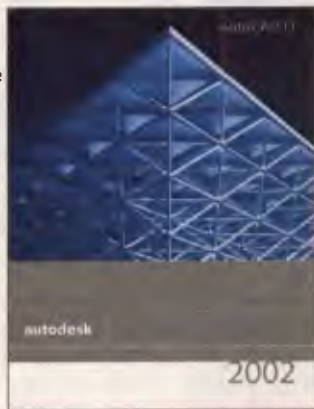
QUDOS





AutoCAD LT 2002

AutoCAD LT® 2002 is the only 2D CAD program providing 100-percent DWG compatibility with AutoCAD® 2002 - based products. That means you can open, edit, and exchange drawing files (DWGs) with complete confidence. A comprehensive Internet toolset streamlines collaboration between design team members - shortening cycle times and reducing costs. Plus new enhancements like automated associative dimensioning help you create quality designs more efficiently.



AutoCAD 2002

With AutoCAD® 2002, you can get your design information where it's needed - quickly, easily, and accurately. Its design collaboration tools help you maximize the value of your design data - by sharing files, accessing design resources, and meeting in real time with the entire project team. With powerful features such as CAD standard management tools, associative dimensioning, new Object snaps, 3D Orbit and more, AutoCAD® 2002 will help you create quality designs more efficiently giving you that strategic competitive advantage.

Upgrades also available for AutoCAD 2000 and AutoCAD 2000i. Call for pricing.



Upgrade
\$449.00
Websearch Code...AUT481

Full Version
\$1799.00
Websearch Code...AUT482

Educational
pricing
available

Full Version
\$7199.00
Websearch Code...AUT483

Volo View 2

Volo™ View 2 software is a cost-effective, easy-to-use digital design viewing solution that lets everyone on your team electronically review, mark up, measure, and plot AutoCAD® and Autodesk Inventor™ based drawings. Upgrades available, call for pricing.



New
Version

\$399.00
Websearch Code...AUT488

AutoSketch 8

An affordable and easy-to-use precision drawing tool for new or occasional CAD users who need to create conceptual drawings and sketches. It provides productivity and ease of use features not found in other low cost precision drawing programs. From concept sketches, information graphics and floor layouts to presentations, electrical drawings and home project plans, you can draw it all - quickly and accurately.



New
Version

\$229.00
Websearch Code...189580

QuickCAD 8

QuickCad is the most affordable design program that Autodesk offers, but its low price doesn't diminish its capabilities. It comes with plenty of productivity features that let you make technical designs and diagrams. With its short learning curve, QuickCAD lets you start drawing right away by offering a simple beginner interface, then as you grow familiar with its capabilities, you can change to advanced or expert levels.



New
Version

\$99.00
Websearch Code...189591



Student Versions \$275



AutoCAD 2002

Autodesk
Architectural Desktop 3.3Autodesk
VIZ 4Autodesk
Inventor 5Autodesk
Mechanical Desktop 6Autodesk
Land Desktop 3

DATABASE

Symbols 2000 Architectural

A professional collection of more than 5,600 architectural symbols that let you complete detailed floor plans and construction documents dramatically faster. The package includes symbols for external layouts (bushes, trees, people), plan views, elevations and sections, electrical installation, building services/HVAC (plumbing, ventilation), kitchens, bathrooms, office furniture, network planning, pictograms for recreation, sports organization and planning.



\$149.00
Websearch Code...130191

Symbols 2000 Engineering

A collection of more than 10,000 symbols in total, covering symbols for manufacturing and schematics drawings. The set includes more than 3,100 symbols for electrical schematics and installation plans complying with IEC standards with symbols for switching equipment, generation and conversion of energy, telecommunications and electrical installation.



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Websearch Code...130331



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DATABASE

Belkin Wireless Router (3 port)

Share your Broadband Connection without Wires.



\$599.00

Websearch Code ...189458

Belkin Access Point

Adds to your existing Network and connects wireless-equipped computers to your network.



\$515.00

Websearch Code ...189454

Belkin Wireless PCMCIA Adapter Card

Connects your Laptop to a Wireless Network via PCMCIA slot.



\$219.00

Websearch Code ...189732



FileMaker.

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SEE DETAILS BELOW

FileMaker Developer 5.5

FileMaker Developer 5.5 is the essential development environment for creating professional custom FileMaker solutions to be used for the Web, across workgroups or as royalty-free runtime applications. Powerful tools have been added to save you valuable development time. Test and verify your scripts with the new Script Debugger. Document the structure of any FileMaker solution with the push of a button and view detailed information on fields, layouts, value lists, scripts, relationships and passwords. Connect to external data sources with our JDBC, or ODBC drivers. Whether you are developing commercial or in-house solutions, FileMaker Developer 5.5 is the tool of choice.



\$1049.00

Websearch Code ...FID051

FileMaker Server 5.5

The Database Server for Growing Workgroups

An easy-to-use relational database server - is the best way to host your FileMaker Pro 5.5 solutions on Windows 2000, Mac OS X, Mac OS and Red Hat® Linux. This high-performance server engine supports up to 250 FileMaker Pro 5.5 guests simultaneously on multiple platforms with several protocol options and up to 125-hosted files. It includes automatic plug-in updating, scheduled backups and remote administration tools to monitor server activity and to control guest and file connections.



Upgrade
\$1029.00

Websearch Code ...FIS030

Full Product
\$2099.00

Websearch Code ...FIS075

FileMaker Pro 5.5

Manage Your Data from Desktop to Web



FileMaker Pro 5.5 is the world's first software native for Mac OS X and logo-certified for Windows 2000. FileMaker Pro 5.5 helps Business Workgroups manage and share vital information with colleagues across the office or around the world. Whether you interface with Microsoft Office, develop your own databases, or exchange information with any kind of application, the new design tools in FileMaker Pro 5.5 will let you create powerful, customised business solutions. The new and faster FileMaker Pro 5.5 Web Companion provides a richer FileMaker experience over the Web.

Full Product
\$529.00

Websearch Code ...FIP022

Upgrade
\$325.00

Websearch Code ...FIP023

FileMaker Mobile

Companion for Palm OS

Be productive in just minutes with this easy-to-use FileMaker Pro 5 companion - just load and go. Take along just the data you need; load the field names and data you select from your single-user FileMaker Pro 5 databases onto the Palm OS handheld with just a few clicks. No need to invest time or effort to re-build your databases on the handheld; FileMaker Mobile does it for you.



Palm for illustration purposes only.



\$105.00

Websearch Code ...FIM020

FileMaker Pro 5.5 Unlimited

Powerful Web database publishing which brings expanded productivity to the business workgroup. Utilise the FileMaker Web Server Connector to increase the performance, reliability and scalability of your FileMaker Web databases. Use multiple copies of FileMaker Pro 5.5 Unlimited to set up a redundant array of inexpensive computers structure to provide scalable load balancing and ensure operation through fail over situations. It may also be used with a wide variety of middleware applications, CGIs, and application servers for large-scale customised web solutions.



Unlimited Web deployment

Upgrade
\$999.00

Websearch Code ...FIP020

Full Product
\$1999.00

Websearch Code ...FIP019

Tell a Friend & WIN PROMOTION

Tell a friend or colleague about FileMaker Pro and you could win a Business Productivity Booster Pack valued at approximately \$990.00. By providing their contact details - with their permission - you will be entered into a draw to win:

- FileMaker Pro 5.5 • FileMaker Mobile 1.0 • Palm M105

To enter, complete you and your friend's contact details as outlined on the FileMaker web site at <http://www.filemaker.com.au/promos/tellafriendpromo.html> or by phoning FileMaker Customer service Australia 1800 028 316. The promotion can be entered more than once. Offer begins at 9am on 11 February 2002 and concludes at 5pm on 30 June 2002. Entries received after the deadline will not be accepted. Entries will be accepted via the Web at <http://www.filemaker.com.au/promos/tellafriendpromo.html> or by phoning FileMaker Customer service Australia 1800 028 316 only. Entries received by other means will not be accepted. Entry is open to all residents of Australia and New Zealand other than employees of FileMaker, Inc, their immediate families and agencies. By providing FileMaker with your friend's details, we assume that you have received the permission of the third party and it is essential that their permission is gained prior to entering the promotion. FileMaker Inc's privacy policy is available at http://www.filemaker.com.au/legal/notice_privacy.shtml. ©2002 FileMaker, Inc. All rights reserved. FileMaker is a trademark of FileMaker, Inc, registered in the U.S. and other countries. All other trademarks are the property of their respective owners.



Quicken Personal 2002

Quicken Personal 2002 is the easiest way ever to manage your personal finances. Developed for Australia, Quicken Personal is the world's best selling financial management software making it very quick and easy to:

- Track your family income and expenditure
- Manage your investments and share portfolio
- Track your credit cards, bank accounts, loans and savings goals
- Prepare tax returns in minutes
- Link with the ASX to automatically update your share portfolio.



Personal 2002
\$75.00
Websearch Code ...QUI202

Quicken Personal Plus 2002

Reduce your debt faster and pay less interest with the Debt Reduction Planner. Create strategies to help you save and build wealth with the Save More Planner. Keep up-to-date records using the financial address book and free form emergency record organiser. Keep track of your home and contents with Quicken Home Inventory Activate tax specific alerts to notify you of upcoming deadlines.



Personal Plus 2002 Upgrade
\$89.00
Websearch Code ...QUI201

Personal Plus 2002
\$115.00
Websearch Code ...QUI200

ACCOUNTING

QuickPayroll 8

Payroll management gives you the ability to comply with the latest reporting requirements brought about by the GST.

- Track employee leave, pay and superannuation details.
- Work with a flexible Award interpretation system.
- Print payroll outputs.
- Electronically lodge payment summaries on ATO stationery.

QuickPayroll v8 links with QuickBooks v8 software to transfer payroll information directly into the company's accounts.



\$349.00
Websearch Code ...QUI193

QuickBooks and QuickBooks Pro 8

Designed especially for small and medium businesses with double entry accounting needs, QuickBooks is GST Easy, QuickBooks' GST management technology, plus the simple set-up and ease of use, sets the product apart from the rest. Getting started and then using QuickBooks on a day-to-day basis is easy, with simple navigation, lay out and easy to use features. QuickBooks offers the ability to tailor the product more specifically to your requirements, such as choosing cash only or accrual double entry accounting.

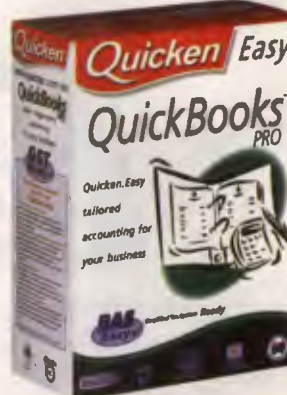
New features in Version 8

- Tear off Remittance advice
- STS (simplified tax system) depreciation register
- MYOB Data converter
- Accounts Data Transfer (for Solution 6, & Xion packages)
- Credit Advantage (speedy credit checking)
- Instantment Activity Statement
- Improved Business Activity Statement (BAS)
- Online backup (free 30 trial)

Includes cashback voucher for those upgrading from previous selected versions of QuickBooks and QuickBooks Pro.

QuickBooks
\$224.00
Websearch Code ...QUI196

QuickBooks Pro
\$389.00
Websearch Code ...QUI198



QuickBooks

Quicken CashBook

CashBook is a single entry cash accounting package for small businesses. This package will easily manage your business finances. CashBook uses single entry accrual accounting. CashBook also monitors sales, controls production, stores customer and supplier records and logs customer enquiries.

CashBook features include:

- Producing quotes, work orders and invoices
- Managing work in progress and updating job records
- Accounts receivable and payable tracking
- GST management for tracking inputs and outputs for the relevant tax codes (except Wine Equalisation Tax)
- Producing the information needed for Business Activity Statements
- Tracking bank balances and printing cheques



\$174.00
Websearch Code ...QUI175

QuickPOS with QuickBooks Pro

QuickPOS 2001 is the answer to a simple, computerised cash register. This makes QuickPOS very easy and fast to use with minimal training required. Track your sales, inventory, employees, accounts receivable and chart of accounts with the press of a button. Complete all the tasks your'e used to with your manual cash register and more.

CashBook features include:

- Customisable end of day processes
- Blind cash drawer reconciliation
- Global Management Override
- Web Browser
- Change prices straight from QuickPOS
- Random Price Barcodes
- Integrated Eftpos (no more double keying)
- Currency conversion (accept any currency or travellers cheques)
- QuickPOS now supports Touch Screen



\$1569.00
Websearch Code ...130488

Quicken Share Analyser

Quicken ShareAnalyser is the most comprehensive sharemarket analysis software product in its price range. It contains analysis tools usually only available in top-range products and combines the key modules of charting, scanning and portfolio management in a single program, designed for ease of use and seamless integration of functions. Its synchronization with Personal Plus provides users with an extended money management package.



\$189.00
Websearch Code ...QUI196



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



STORAGE

iomega® CD-RW USB 16x10x40x USB 2.0.

The iomega External 16x10x40 CD-RW drive boasts higher speeds due to higher throughput of USB 2.0. This drive is also compatible with USB 1.1, which limits the drive speeds to 4x4x6. It includes all the hardware and industry-leading software you need to burn fast. Product also includes USB data cable, audio cable, external power supply, one CD-R disc, and quick install manual.



\$499⁰⁰
Websearch Code 185011

Zip 250MB USB Host Powered

NEW - Zip® 250MB USB host-powered drive

Now it's even easier to take your information with you. The Zip™ 250 USB drive is now available with a USB cable that provides both data and power, so you don't need any external power source. Powered by a USB cable, its easy to connect (just plug it in) and easy to launch (no rebooting). This new drive is compatible with most major operating systems and all Zip™ 100MB and 250MB Zip™ disks.



i
iomega

\$399⁰⁰
Websearch Code 111061

Zip 100MB Fast Start

With the simplicity and reliability of a Zip® 100MB Parallel drive and a Zip® 100MB disk included, there's no faster way to get started with iomega!

Create, edit, share and back up your work or personal information with Zip. It is easy to use and operates just like a floppy. It allows you to effectively manage your work and large files like presentation material, graphics, architectural drawings, digital photos and music. It makes unlimited storage incredibly affordable.



i
iomega

\$249⁰⁰
Websearch Code 10M182

Zip 100MB USB Host Powered

NEW - Slimline USB host-powered drive

The Universal Serial Bus (USB) technology is the emerging standard for connecting anything to your computer. This state-of-the-art interface makes good on the long-touted promise of simple plug-and-play capability, moving beyond traditional limitations and annoyances of the SCSI or parallel port interfaces. Now, USB-equipped Macintosh and PCs running Microsoft Windows 98 can begin utilizing USB advantages.

- Back up your hard drive
- Take your stuff with you
- Use it like a hard drive
- Great for multimedia
- Plug-and-play USB connection

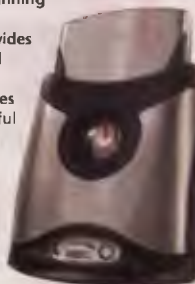


i
iomega

\$195⁰⁰
Websearch Code 10M181

Peerless

The next generation in high-capacity removable storage. iomega's Peerless™ drive system offers 10GB and 20GB disks, interchangeable interfaces, and 15MB/sec transfer rates for stunning performance. Slim, modular design provides reliability, speed and portability. Firewire® and USB 1.1 interfaces available. It's powerful enough to store all your files, fast enough to run applications straight from the drive, and versatile enough to go anywhere with you.



RentSmart \$10.95 pw

USB 20GB
\$999⁰⁰
Websearch Code 10M155

RentSmart \$10.95 pw

Firewire (Mac/PC) 20GB
\$999⁰⁰
Websearch Code 10M157

Predator 24x10x40x

External USB 2.0 CD-RW drive boasts higher speeds due to higher throughput of USB 2.0. This drive is also compatible with USB 1.1, which limits the drive speeds to 4x4x6. It includes all the hardware and industry-leading software you need to easily and very quickly burn CDs. Comes with iomega HotBurn CD mastering software, MusicMatch Jukebox, and Adobe ActiveShare for PC. Product also includes USB data cable, audio cable, external power supply, one CD-R disc, and quick install manual.

Note: This product does not include a hi-speed USB 2.0 card necessary to achieve full 24x10x40 speeds. This card for the computer must be purchased separately or comes as part of the original computer hardware.



i
iomega

\$549⁰⁰
Websearch Code 189323

Microdrive

iomega's Microdrive 340MB and 1GB miniature removable drives provide high-performance storage for digicams, laptops, and PDAs. Enjoy the freedom of expanded storage capacity for a fraction of the price of flash memory cards. Perfect for capturing hundreds of photos, presentations, PDFs, spreadsheets, music and video. CF+ type II format. Includes \$130 iomega coupon booklet.

- Fits virtually all CompactFlash™ ready digital devices.
- Get more megabytes of storage at a fraction of the cost.
- Fast data transfer speeds.
- Easy plug and play sharing between devices.
- PC card adapter is included.



340MB
\$449⁰⁰
Websearch Code 10M153

RentSmart \$9.96 pw
1GB
\$909⁰⁰
Websearch Code 10M152

iomega® Peerless Drive Disks for PC or Mac



i
iomega

IOM158	PEERLESS 10GB DISK PC	\$339.00
IOM159	PEERLESS 20GB DISK PC	\$419.00
IOM160	PEERLESS 10GB DISK MAC	\$339.00
IOM161	PEERLESS 20GB DISK MAC	\$459.00

Accessories/Media

129488	Jaz 1GB PC Disk	\$195.00	189566	Jaz 2GB Mac Disk	\$195.00	129828	Zip 100MB Mac Disk	\$29.00
IOM032	Jaz 1GB PC 3 Pack	\$569.00	189565	Jaz 2GB Mac 3 Pack	\$565.00	IOM074	Zip 100MB Mac 10 Pack	\$199.00
189567	Jaz 1GB Mac Disk	\$199.00	IOM106	PocketZip 40MB 2 Pack	\$49.00	IOM103	Zip 250MB PC Disk	\$35.00
AUP162	Jaz 1GB Mac 3 Pack	\$575.00	189568	PocketZip 40MB 10 Pack	\$215.00	IOM102	Zip 250MB PC 10 Pack	\$249.00
129664	Jaz 2GB PC Disk	\$215.00	IOM085	Zip 100MB PC Disk	\$29.00	IOM007	Zip 250MB Mac Disk	\$35.00
IOM089	Jaz 2GB PC 3 Pack	\$625.00	IOM030	Zip 100MB PC 10 Pack	\$199.00	189558	Zip 250MB Mac 10 Pack	\$279.00

Click here to buy . . .

www.iswh.com.au



UTILITIES & STORAGE

ZoneWerx

IntraZone 3.0 - The world's most adaptable intranet.

"We invested \$25,000 and over 6 months developing our intranet - It doesn't come close to what IntraZone offers."

B. Stevenson
Micro Blue

IntraZone is an out-of-the-box Intranet solution for small and medium businesses or divisions and project groups in larger organizations.

The IntraZone solution streamlines your day to day business operations by providing staff with easily accessible communication tools, scheduling, discussion forums, project management, quotation pipelines, resource management, templates, company forms, policies, training, information, news and events.

Additionally, it provides the ability to share and distribute documents and data between staff, departments and offices - regardless of platform or geographic location. Access to IntraZone is through a standard Internet browser, minimising training requirements and increasing productivity.

IntraZone can be installed on your company's Microsoft Windows 98, Windows 2000 or Microsoft NT server within minutes and easily customise with your company details, logo and colors ensuring your intranet is launched with your corporate identity.

\$369.00

Websearch Code13057



multimedia

multimedia

Maxtor

1394 External Storage

The easy way to add storage

The fast, easy way to add storage to your PC or Mac. With data transfer rates up to 30 times faster than USB and the highest capacity available, the 1394 External Storage solution is perfect for today's storage-hungry digital entertainment equipment. Just plug it in and go - it's ready to use right out of the box for PC users and Mac users. Compatible with 1394, i.LINK and FireWire and powered by Maxtor's award-winning hard drive, it offers dependable storage/back-up for all your important documents and precious memories. Each easy to install 80 GB unit stores up to 20,000 MP3 tunes, 80 hours of compressed video or 8,000 digital pictures (10Mb / 3.3 Mpixels). Stack more than one of these ultra-sleek units for virtually unlimited storage.

Run applications, edit videos, listen to music, download files, or play games. Powered by Maxtor's award-winning hard drive, Maxtor's External Storage offers dependable storage/backup and work space for all your important documents and precious memories. Every Maxtor External Storage device is backed by unparalleled support, including our renowned No Quibble Service.



Add 80gb extra storage space!

80 GB or 40 GB

Designed for fast, easy storage upgrades

PC and Mac Compatible

FEATURES:

Easy installation

1394, i.LINK and FireWire compatible

Stackable ultra-sleek design

400 Mb/sec data transfer rate

Powered by Maxtor's award-winning hard drive

No Quibble Service and support

80GB

\$779.00

Websearch Code MAX001

40GB

\$525.00

Websearch Code MAX002

Dragon Naturally Speaking Mobile v5

Now you don't need your laptop to create reports and presentations when you're on the move! Simply speak naturally into the palm sized digital recorder. Edit and format documents in virtually any Windows application hands-free!

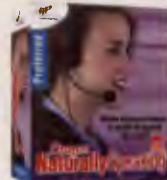


\$549.00

Websearch Code DRG001

Dragon Naturally Speaking Preferred v5

With Dragon Naturally Speaking Preferred v.5 you can create, edit, and revise documents and email - even surf the Web entirely by voice.



BONUS

Kensington laptop bag & Kensington Mouse



\$59.95

\$259.00

Websearch Code DRG002

COMPUTER PRODUCTS AT ROCK BOTTOM PRICES!!!



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ESEN OFFICE FURNITURE

FILING CABINETS ESN2DRW

2-drawer melamine filing cabinet.

Dimensions:
H654 x W459 x D446

\$149.00

ESN3DRW

3-drawer melamine filing cabinet.

Dimensions:
H951 x W459 x D446

\$199.00



DESKS & WORK STATIONS



906 Grey

Double full-width pullout keyboard shelves, combined desk-hutch 20-CD storage rack.

Dimensions
H1305 x W630 x D500

\$99.00

DESKS & WORK STATIONS



812 B&H

Wide computer desk-hutch new curve design, extra-wide keyboard slide-out scanner tray 15 CD-storage, angled storage.

Dimensions
H1437 x W1231 x D530

\$179.00

DESKS & WORK STATIONS



S800 BEH

Combined desk & hutch, 15-CD rack. Pull-out scanner/keyboard shelves.

Dimensions
H1305 x W1005 x D500

\$169.00

DESKS & WORK STATIONS



303B/303H

Desk hutch combination, drawer slide-out ergonomic keyboard shelf reversible & height adjustable assembly. 20-CD rack, open storage shelves.

Dimensions
H785 x W1220 x D596

Hutch
H596 x W1180 x D296

\$269.00

DESKS & WORK STATIONS



305B/303H

All-in-one computer desk 20-CD rack. Storage cupboard with door, open shelving.

Dimensions
H785 x W1220 x D596

Hutch
H596 x W1180 x D296

\$349.00

HOME-OFFICE SUITES



1000B/1010H

Multiplex desk with adjustable shelves pull out keyboard & scanner/print shelves.

Dimensions
H760 x W1490 x D700

Hutch
H612 x W1490 x D350

\$445.00

Accessories not included

MODEL	WEIGHT	NSW Inc GST	QLD Inc GST	VIC Inc GST	WA Inc GST
906	28kg	\$18	\$36	\$36	\$45
812	45kg	\$24	\$48	\$48	\$62
S800	35kg	\$21	\$41	\$41	\$52
303B/303H	47kg	\$24	\$49	\$49	\$64
305B/303H	51kg	\$25	\$52	\$52	\$68
1000B/1010H	68kg	\$30	\$64	\$64	\$85
ESN2DR	25kg	\$18	\$34	\$34	\$42
ESN3DR	30kg	\$19	\$38	\$38	\$47



SONY DSCP20 Kit



1.3 Mega Pixel Memory Stick Digital Still CyberShot Camera with ACCCPW Kit. Featuring 3x precision digital zoom, high speed auto focus. 50 sensitivity setting. Recording mode is selectable from JPEG, TIFF, GIF animation and MPEG Movie



ACCSPW Kit includes Rechargeable Battery, Battery Charger and Carry Case.

\$818.00

Websearch Code.....SONY21

RentSmart \$8.97pw

SONY DSCP30 Kit



1.3 Megapixel Memory Stick Digital Still CyberShot Camera with ACCCPW Kit. Designed as an easy-to-use point-and-shoot digital camera. 3x optical and 6x precision digital zoom. High speed auto focus. AF illuminator and ISO sensitivity. Recording mode is selectable from JPEG, TIFF, MPEG, text modes and clip motion.



ACCSPW Kit includes Rechargeable Battery, Battery Charger and Carry Case.

\$935.00

Websearch Code.....SONY20

RentSmart \$10.25 pw

SONY DSCP50 Kit



2.1 Mega Pixel Memory Stick Digital Still CyberShot Camera with ACCCPW Kit. Increase of resolution to 2.1 Mega Pixels. Offers a 3x optical zoom lens. 6x digital zoom. MPEG Movie EX and ISO sensitivity setting. AF illuminator that allows positive focus in the dark.



ACCSPW Kit includes Rechargeable Battery, Battery Charger and Carry Case.

PRICE DROP
PRICE DROP

\$929.00

Websearch Code.....SONY22

RentSmart \$10.18 pw

SONY HandyCam DCRTRV530

Digital8 (up to 500 lines), 700x/50x selectable digital zoom (25x Optical zoom), memory stick slot, USB terminal, 3.5" LCD monitor, analog/digital signal conversion, digital program editing, Electronic Super SteadyShot, Super NightShot, plus more!



\$1699.00

Websearch Code.....189538

RentSmart \$18.62 pw

Sony Internal 16x10x40x IDE



Features 16x Writing, 10x Rewriting, 40x Max Reading, CAV Operation, supports all major recording/playback formats, convenient IDE interfacing, supports Digital Audio Extraction, Burnproof Technology, MPC-3 and Orange Book Compliant. Retail kit with internal drive, cables, media and mounting screws. Supplied with software compatible with Win 95, 98, NT4, 2000 and ME.



CD-RW Retail Kit
CRX161182U

\$249.00

Websearch Code.....SONY01

Sony Internal 12x8x32x SCSI



Incorporates the latest High-Speed R and RW technology and features performance SCSI interfacing. Comes complete with cables, media and Adaptec software (requires SCSI card). Features 12x recording, 32x max playback, high speed re-writing, accelerated audio mode, large 4MB buffer, powered tray loading, supports all major formats and media types.



CD-RW Retail Kit
CRX160SBK

\$429.00

Websearch Code.....SONY82

Sony External 1394 12x8x32x

This external drive combines 12x burning with the latest high performance interfacing. Supplied as a kit, it comes complete with cables, media and Adaptec software for Mac and Windows. Features IEEE1394 interface, 32x Max playback, reads all major formats, supports high speed fire-writing, accelerated audio modes, CAV Operation, large buffer, plus more.



CD-RW Retail Kit
CRX1600LEK

\$569.00

Websearch Code.....SONY89

RentSmart \$6.30 pw

Sony Port 20/8/24/8 USB



Portable 20x burner, 24x CD/ 8x DVD player. Supplied as a retail kit with software, interface cable and 110/240V power supply. Compatible USB1 and 2. Features 20x Max Recording, PowerBurn Technology, 8x Rewriting, 24x Max CD Playback, 8x Max DVD Playback, USB 2 Interfacing, Mac and Win compatible.



Combo CD-RW Kit
CRX85UA2

\$759.00

Websearch Code.....189576

DIGITAL CAMERAS & STORAGE

hp CD 16r1 series

- internal EIDE 16x10x40 cd-rewritable drive with with HP's Buffer Under Run Prevention technology
- includes powerful and easy-to-use CD creation and music mixing software
- write up to 700 MB to a CD in about 6 minutes



\$285.00

Websearch Code.....HPP150

hp CD-Writer Drive cd4ce External

4X write, 4X write, 6X read with USB 1.1 interface. 2MB buffer, 125ms random access time, 1.5MB/sec burst transfer rate. Includes HP CD Creation software, MusicMatch Jukebox, ArcSoft PhotoCenter and ArcSoft Video Impression.



\$389.00

Websearch Code.....189258

SONY.
SONY.
SONY.
SONY.



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



DIGITAL CAMERAS & STORAGE

LaCie Pocket CD-RW 8x8x24x

- Read and write CDs anywhere
- Burnproof USB11/2 & FastFireWire (IEEE1394) performance, USB convenience.
- Hot-pluggable: easily swap among Macs and PCs
- Unique design: stylish, ultra-portable, shock absorbent with a handy cable groove
- Autonomous: no need for an AC adapter with self-powered FireWire bus



\$635.00

Websearch Code ...130248

RentSmart \$7.11 pw

LaCie External CD-RW for Mac & PC

USB & Firewire in new StudioDrive casing!



16xW/10xRW/40xR
USB11/2

\$445.00

Websearch Code ...189582

16x W/ 10x RW/ 40xR
B/proof Ext.

FastFireWire & USB11/2

\$499.00

Websearch Code ...111134

24x W/ 10x RW/ 40x R
B/proof Ext.

FastFireWire & USB11/2

\$539.00

Websearch Code ...LAC027

RentSmart \$5.97 pw

Kodak Kodak Kodak Kodak

Kodak DX 3500

Featuring 2.2 megapixel resolution. 3X digital zoom and a convenient close-up mode. Share pictures over e-mail or for printing photo-quality prints up to 8"x10". Comes ready to shoot with 8MB of internal memory. COMPACTFLASH expansion slot that lets you add additional memory.



\$549.00

Websearch Code ...KOD087

RentSmart \$6.02 pw

Kodak DX 3600

Offers 2.2 megapixel resolution. 6X zoom (2X optical, 3X digital). Up to 18 x 24cm on your inkjet printer. Lets you capture and review video with audio right on the camera. Connect to a Computer or TV. 8MB of internal memory. COMPACTFLASH expansion slot.



\$799.00

Websearch Code ...KOD091

RentSmart \$8.76 pw

Kodak DX 3700

3MP digital camera with the point and shoot simplicity. EasyShare DX3700 Digital Camera. 3.1 MP resolution for excellent picture quality up to 11" x 14". Getting closer to the fun is easy with the 3x digital zoom. Realistic pictures up to 11" x 14".



\$799.00

Websearch Code ...KOD093

RentSmart \$8.76 pw

Kodak DX 3900

3.1MP resolution. Prints up to 11" x 14". 6X zoom (2X optical and 3X digital). Set your own color mode, ISO, and lighting exposure settings. COMPACTFLASH Card. Optional telephoto, wide-angle, and up-close lens attachments. KODAK EasyShare Camera Dock.



\$1099.00

Websearch Code ...KOD092

RentSmart \$12.05 pw

Kodak DX 3215

1.3MP resolution for great prints up to 5" x 7". A 4X zoom (2X optical and 2X digital). With 8MB of internal memory, you'll never miss a shot. MultiMediaCard/Secure Digital memory (MMCSD) expansion slot. Simply place your DX3215 in the dock, touch the button, and pictures are automatically sent to your computer ready for e-mailing and printing.



\$459.00

Websearch Code ...KOD090

Kodak Picture Paper

Kodak Premium Picture Paper A4 Glossy 15 X 220GM **\$13.95** 189563

Kodak Premium Picture Paper A4 Satin 15 X 220GSM **\$15.95** 189301

Kodak Ultima Picture Paper Ultra Glossy 15 X 270 GSM **\$24.95** 189300

Kodak Premium Picture Paper A4 Glossy 50 X 220GSM **\$34.95** 189631

Roxio Toast 5 Titanium For Mac



Creates music, data & video CDs. Toast Includes: CD-ROM with CD Spin Doctor, Qdesign MVP, iView Multimedia, Magic Mouse Discus, Toast Audio Extractor, Roxio Bonus CD with MP3 songs, video clips and 4 short films. User Guide, cable to connect a computer to a stereo system's Lineout.



\$179.00

Websearch Code ...ATOAST

Roxio Easy CD Creator 5 Platinum

Access music on the Internet. Fine tune your music tracks. Edit and enhance photos and videos with a pro's touch. Includes: CD with Sound Stream 2, DirectCD, Spin Doctor, CD Copier, ideol-impression, Photo Album, Video Postcard, VideoCD Creator, CD Label Creator, Sound Editor, Session Selector, Web CheckUp.



\$125.00

Websearch Code ...EASCD

Pioneer DVR-A03 DVD-R/RW & CD-R/RW Drive

Writes DVD-R (1x and 2x), DVD-RW (1x), CD-R (4x and 8x), CD-RW (4x). Reads DVD-ROM, DVD-Video, DVD-R, DVD-RW, CD-ROM, CD-R, CD-RW, CD-TEXT, Photo CD, Audio CD. Disc-at-once and incremental write. Re-Recordable. Supports 9.4G Double Sided DVD-R Media. Includes 1x DVD-R Media, 1x DVD-RW Media, 5x CD-R Media, SONIC MyDVD Authoring Software, PrimoDVD DVD/CD Writing Software, CyberLink PowerDVD 3 and STAETTLER LUMOCOLOR pen.



ATAPI **\$1025.00**

Websearch Code ...189577

RentSmart \$11.45 pw

FireWire (Win) **\$1225.00**

Websearch Code ...189578

RentSmart \$13.43 pw



Mouseman Dual Optical

This advanced mouse employs two optical sensors 800 dpi each! For high-performance, maximum precision, and smoother scrolling. Perfect for use on hard-to-read surfaces such as wood. Comes with custom scroll wheel and patented WebWheel software.

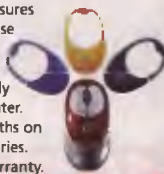


\$85.00

Websearch Code...LOG003

Cordless Mouse Special Edition

Change your mouse color to fit your mood. Choose among four stunning hues: Vivid Blue, Midnight Dusk, Signal Red, or Amber Yellow. Get total cordless freedom. Digital radio technology ensures that your mouse works even when not pointed directly at your computer. Work for months on included batteries. Three-year warranty.



\$89.00

Websearch Code...LOG002

MouseMan Traveler

Logitech's stylish, compact mouse is specifically designed for notebook use. Travel anywhere with it! The high-performance optical sensor offers smoother scrolling and greater accuracy, and there is no ball to clean.

MouseMan Traveler's innovative design fits comfortably in either hand. Includes a protective carrying case. Five-year guarantee.



\$109.00

Websearch Code...LOG008

Cordless MouseMan Optical

Discover the outstanding cordless optical mouse for PC and Macintosh! There's no cord to limit your movement and it's optical so that you can use it on any surface. Logitech's patented digital radio technology works in a two-meter range of your computer.



\$129.00

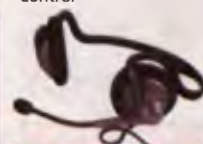
Websearch Code...189324

LOGITECH

Labtec Axis 002

Behind-the-Head Stereo Headset with Boom Microphone.

- Ideal for Voice-Ove IP Applications
- Rich Stereo Sound for Gaming, Music and Chat
- New microNAT-2 (superscript: TM) Noise Cancelling Microphone for speech recognition
- Mute Switch and Volume Control



\$55.00

Websearch Code...189285

Cordless Freedom iTouch

Enjoy complete control and reliable performance, without cords that catch or tangle. iTouch lets you access the Internet, open e-mail, search, or launch applications with one touch of a key.

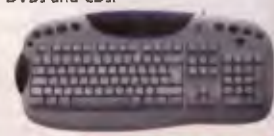


\$169.00

Websearch Code...130951

Internet Navigator Keyboard

Navigate the web in maximum comfort. The innovative design features Zero Degree Tilt - the lowest profile keyframe available - to make every keystroke easy. Multimedia controls for your favorite MP3s, DVDs and CDs.



\$69.00

Websearch Code...LOG294

Cordless Freedom Optical

The ultimate cordless keyboard and optical mouse provides less clutter, more style, and more freedom. A revolutionary cordless optical mouse that runs on almost any surface.



\$214.00

Websearch Code...LOG129

Cordless Freedom Pro

Without cords, place this keyboard and mouse wherever they are comfortable for you. The curved keyboard with split key layout enhances typing control. The contoured mouse provides maximum comfort and control.



\$210.00

Websearch Code...LOG108

TrackMan Live

Gain new freedom to navigate applications, multimedia, and the Internet, without cords that catch or tangle. Logitech's patented technology provides superior performance without needing a clear path or pointing the mouse and keyboard at the computer. iTouch Multimedia provides one-touch control for CD's, MP3 files and DVD's. With iTouch Internet, access the internet, open e-mail, search, or launch applications with one touch of a key. WebWheel lets you quickly navigate the web and control your browser with the mouse Scroll Wheel.



\$295.00

Websearch Code...LOG125

Marble Mouse

Logitech Marble Mouse fits right and left hands like a mouse yet works with the convenience of a trackball. Patented optical technology provides superior precision, reduced wear, and smooth motion, and eliminates the need for regular cleaning. Enjoy the fit you love in a mouse, yet just move the trackball instead of moving the whole mouse around. It saves desk space, reduces hand and wrist movement, and plugs very easily into your system's USB or PS/2 port. Includes Logitech MouseWare software for easy scrolling and web shortcuts. Use it with Windows or Macintosh systems. Three-year warranty.

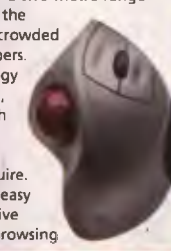


\$69.00

Websearch Code...189287

Cordless TrackMan Wheel

Experience true freedom. Place this comfortable optical trackball where you choose. Its digital radio technology works in a two-metre range without being pointed at the computer, even on desks crowded with cups, books, and papers. Patented optical technology delivers superior precision, reduced wear, and smooth tracking - all without the regular cleaning that mechanical trackballs require. The scroll wheel provides easy scrolling, and the innovative WebWheel feature puts browsing commands and web sites at your fingertips. Includes one AA battery.



\$119.00

Websearch Code...LOG002

QuickCam Express

QuickCam Express is an Internet video camera offering affordable and simple video and still image Internet communication.

- USB port connector for instant connectivity
- Larger Focus Ring for greater ease of use
- Custom camera base for precision camera positioning
- Up to 30 frames per second video frame rate - TV quality smooth motion video
- Cross platform video/still image E-Mail compatibility
- Software included



\$95.00

Websearch Code...LOG101

QuickCam Web

Featuring an integrated microphone and an excellent assortment of easy-to-use software the redesigned QuickCam Web has everything you need. Capture video, create web pages, make video calls over the Internet, video monitor, and more. Now anyone can add exciting pictures to their e-mail and send them to friends, with no special software or camera needed by the recipient. Broadcast LIVE video and audio over the Internet. The Logitech QuickCam Web is the perfect Internet Video Camera for everyone.



\$169.00

Websearch Code...LOG109

Quickcam Pro 3000 USB

Express yourself creatively with high quality pictures and videos. Utilising a CCD sensor, the QuickCam Pro 3000 takes stunning pictures and videos with a true 640x480 (VGA) resolution. Use its built in microphone to make live video calls to friends and family over the Internet and send exciting e-mail with pictures and videos. QuickCam software lets you easily setup a digital monitoring camera, create a live web cam or broadcast live video and audio over the web. Enhance pictures with sharpen, warp, posterisation effects and more.



\$215.00

Websearch Code...LOG119

ClickSmart 510

Shoot it. Save captivating video or keepsake photos to removable memory cards. Then download it all effortlessly with the new QuickSync system. Its lighted memory button tells you when you have new shots ready to transfer. Includes built-in flash plus software for editing video and photos.



\$339.00

Websearch Code...130998



INTERNATIONAL SOFTWARE WAREHOUSE

EVERYTHING FOR YOUR PC - DELIVERED AUSTRALIA WIDE



PRINTERS & SCANNERS

HP officejet v40

Print, fax, scan and copy seamlessly with integrated software "photo-fit-to-page" button enables you to enlarge a photo with a single touch of a button. Fax and copy at the touch of a button without being connected to a PC. Get started right away with USB connectivity, quick setup instructions and intuitive control panel.



\$515.00
Websearch Code .189460
RentSmart \$5.65 pw

hp PSC 750

The hp PSC 750 is a versatile, flatbed printer, scanner and copier all-in-one. Create colour brochures, make copies of price lists, and scan photos to use in your promotional literature - all using one compact unit, right at your desktop.



\$579.00
Websearch Code .HWP418
RentSmart \$6.35 pw

hp officejet g85

HP's premium performance, all colour, flatbed printer/fax/scanner/copier all-in-one with automatic document feeder for your office.

Scan to e-mail:
• scan anything directly into your e-mail or other applications with a single button push.



\$1179.00
Websearch Code .HWP005
RentSmart \$12.92pw

hp deskjet 656c

- Prints up to 6 ppm black and 3 ppm colour
- Photo-capable with optional hp photo print cartridge
- Black/colour cartridges included
- Brighter, more vivid colours with hp ColorSmart 3
- Compact with fold-up paper tray
- USB connectivity for PC



FREE PRINTER CABLE
\$134.00
Websearch Code .HWP440

hp deskjet 845c

- hp PhotoREt 2 colour layering technology delivers true-to-original colours
- Crisp black text and photo-quality images
- Up to 600 x 1200 dpi using premium photo paper
- No swapping ink cartridges to print outstanding photo-quality colour
- USB connectivity for PC and Macintosh



FREE PRINTER CABLE
\$179.00
Websearch Code .189547

hp deskjet 930c

hp's compact photo-quality colour inkjet printer

- 9ppm black, 7.5ppm colour
- PhotoREt 3, 2400 x 1200 dpi
- Get outstanding photo quality on any paper
- Great for offices with limited workspace
- Parallel / USB
- Win/Mac



FREE PRINTER CABLE
\$239.00
Websearch Code .HWP435

hp deskjet 960c

- Up to 2400 x 1200 dpi using premium photo paper
- hp ColorSmart 3 - optimises text, graphics and photos by automatically adjusting colour settings
- Low-ink indicator ensures you never run out of ink while printing
- Optional automatic two-sided printing



FREE PRINTER CABLE
\$439.00
Websearch Code .HWP441

hp deskjet 990cxi

Good quality prints, and a host of useful features.

- Up to 17ppm black printing and 13ppm colour
- 2400x1200dpi on photo paper
- Two sided printing
- Infrared port for printing from mobile devices
- Parallel / USB interface
- Win/Mac



FREE PRINTER CABLE
\$599.00
Websearch Code .HWP508
RentSmart \$6.57pw

hp deskjet 1220c

- 11ppm black, 9.5ppm colour
- PhotoREt 3, 2400 x 1200 dpi
- Outstanding colour quality
- Full bleed A3+printing
- Parallel / USB interface
- Win/Mac



FREE PRINTER CABLE
\$865.00
Websearch Code .HWP436
RentSmart \$9.48pw

HP LaserJet 1200 Series

All models have

- 1200 x 1200dpi
- 15ppm
- HP PCL 5e
- 250 sheet tray
- Parallel / USB interface
- Win/Mac



1200N - HP JetDirect Network Card, optional scanner/copier adaptor, 16mb std, 10/100 Base-T

1200
\$815.00
Websearch Code .HWP501
RentSmart \$8.93 pw

1200N
\$1315.00
Websearch Code .HWP502
RentSmart \$14.41pw

hp scanjet 2200c

The hp Scanjet 2200c colour scanner is a simple, complete solution - everything you need to start scanning today is in the box. Connecting to your USB - PC is a snap with the handy USB port. Exclusive software makes it easy to install - hp's scanning software guides you every step of the way.

- 600 x 1200 dpi hardware resolution
- 9600 dpi enhanced resolution operating system
- Microsoft® Windows® 98, 2000 Professional and Microsoft® Windows® Me
- Handy USB port makes connecting to your USB-PC easy



\$174.00
Websearch Code .HWP504

hp scanjet 4400c

Make your old photos last forever. With the Scanjet 4400cse you can save old family photos, make digital scrapbooks and send them to your family via e-mail. It's easy to do, just press a single button to scan, e-mail, photo reprint, copy and more.

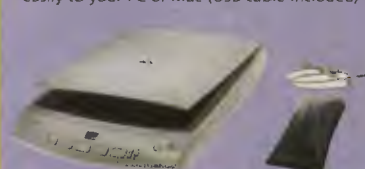
- 1200 x 1200 dpi hardware resolution
- Windows 95, 98, Me, NT 4.0 or 2000 professional.
- USB Connection: Microsoft Windows 98, Me, 2000 and Mac 8.6 - 9.1
- 1 year warranty



\$269.00
Websearch Code .HPS051

hp scanjet 4470c

- 1200 x 2400 dpi hardware resolution
- Scan 35mm negatives and slides with included Active Transparency Adapter
- USB/Parallel ports mean you can connect easily to your PC or Mac (USB cable included)



\$359.00
Websearch Code .HPS053

hp scanjet 5400c

- 2400dpi optical, 2400 x 2400dpi hardware
- 8 sec previews
- 48-bit colour
- Includes USB & parallel cable and power cord.
- MS Windows 95/98/2000/Me/NT4.0 and Mac compatible



\$419.00
Websearch Code .HPS054

hp scanjet 5470c

- 2400 x 2400 dpi resolution
- Parallel Connection: MS Windows 95, 98, Me, NT 4.0 or 2000 professional.
- USB Connection: Microsoft Windows 98, Me, 2000 and Mac 8.6 - 9.1.



\$539.00
Websearch Code .HPS055
RentSmart \$5.91 pw

Canon N640Pex

- Optical resolution is 600 by 1200 dpi resolution up to 9600 dpi.
- OmniPage OCR software and ArcSoft PhotoStudio 2000 image editing included.
- Minimal desktop space - revolutionary 39 mm thick design.
- Parallel interface
- Win



\$129.00
Websearch Code.....CAN310

Canon N1240U

- Amazing 1200 x 2400dpi optical with selectable resolution up to 9600dpi
- 42 bit input colour depth
- New Z-lid for scanning thick documents or books
- Front panel button and software for simple email, fax and copy operation
- Software for Windows & Mac including OmniPage and PhotoShop Elements



\$279.00
Websearch Code.....CAN503

PRINTERS & SCANNERS**Canon PowerShot Digital IXUS V**

Super compact 2 megapixel zoom camera. Same size as world famous IXUS digital camera, the Digital IXUSV features a 2.1 million pixel sensor with 35-70mm retractable Optical Zoom Lens, improved optics and electronics plus 30 second Movie Mode with audio recording, TFT LCD & optical viewfinders, Lithium Ion rechargeable battery and charger included plus USB (only) PC & Mac interface cables, 8MB CompactFlash memory card. Features silver stainless steel and chrome exterior finish.



\$1059.00
Websearch Code ..CAN306

RentSmart \$11.61 pw

Canon D660U

- 600 x 1200dpi optical resolution
- 1200 x 1200dpi optical resolution for slides and film
- Built-in 35mm slide and film scanning
- USB connection for Windows 98/2000 or Mac OS 8.5+
- Front panel and lid mounted
- Includes ArcSoft PhotoStudio image editing and OmniPage OCR software



\$265.00
Websearch Code.....CAN309

Canon S400SP

- Individual ink tanks with low ink sensor
- 1440 x 720 DPI
- Up to 9 PPM in black and 4PPM in colour
- Brilliant colour inks
- Compatibility: Windows 98, Windows 2000, Windows ME and Mac OS 8.1 or later
- Parallel and USB
- Image and Photo optimiser
- Scanner Option



\$249.00
Websearch Code.....189754

Canon N670U

- 600 x 1200dpi optical with selectable resolution up to 9600dpi
- 48-bit input colour depth
- Powered and connected by USB interface including ScanSoft OmniPage
- New Z-lid for scanning thick documents or books
- Incorporating Canon's unique LIDE sensor technology
- 'EZ' buttons for simple, one-touch e-mail, fax and copy operation



\$179.00
Websearch Code.....130929

Canon BJC 1000 SP

- Crisp printing up to 720dpi
- Fast, up to 4ppm in black.
- Up to 2400 pages in black/400 colour pages.
- Exceptional photographic quality. Photo Mode colour with standard inks optimised for plain paper, plus optional PhotoRealism to provide the gold standard in photographic reproduction.
- Parallel interface.
- Win.



\$99.00
Websearch Code.....CAN290

Canon BJC 2100 SP

- 720 dpi resolution plus Drop Modulation Technology.
- 5 ppm black text & up to 2ppm colour.
- Image and photo optimiser.
- Photo Realism option.
- Now with parallel port for Windows 95/98/2000 & Nt 4.0 plus USB for Windows 98/2000 & Mac.



\$129.00
Websearch Code.....CAN301

Canon BJC 85

- USB connectivity
- Up to 5ppm b/w, 2ppm colour
- 720 x 360 dpi
- Optional 4 colour printing
- Cordless printing
- Optional Colour image scanning



\$369.00
Websearch Code.....CAN287

Canon BJC 55 Portable

The ultra-compact BJC-55 Color Bubble Jet Printer is a true powerhouse, delivering all the features you need from a lightweight design and long-life battery to easy USB and wireless connectivity - to produce impressive documents in the office or on the road.



\$599.00
Websearch Code.....189794

RentSmart \$6.19 pw

Canon PowerShot Digital IXUS 300

- 2.11 Mega Pixel CCD
- 3x optical zoom lens
- Ultra compact size (94.8 x 62.5 x 29.9 mm)
- 2.5x digital zoom gives a total of 7.5x seamless zooming.



\$1249.00
Websearch Code ..CAN315

RentSmart \$13.69pw

CONNECTIVITY

Palm m500

Travel light, Expandable, Internet-capable.

Internet capable handheld PC. 8MB memory, advanced high contrast LCD with backlight, Palm OS software 4 (enhanced security and internet connectivity), Address Book/Date and more.



\$749.00

Websearch Code ...USR501

RentSmart \$8.21 pw

Palm m505

Grow as your needs grow.

Internet capable handheld PC with colour display. 8MB memory, 16-bit colour display with backlight, Palm OS software 4, Address Book/Date Book/Clock/To Do List/Memo Pad/Note Pad/Calculator, Secure Digital Multimedia Card Expansion Slot and Universal Connector, Infrared transfer capability, and vibrating and LED alarms.



\$959.00

Websearch Code ...USR502

RentSmart \$10.51 pw

Palm m500/m505

Leather Wallet Case
Beautifully crafted of soft black leather with a slim design. *Palm not included.



\$69.00

Websearch Code ...USR165

Netgear MA301

Wireless PCI Adaptor

NETGEAR's MA301 802.11b Wireless PCI Adapter enables you to easily network all of your employees at 11 Mbps without installing any new wires. (An MA401 Wireless PC Card is required and is sold separately.) Set up a new wireless network or extend your existing workplace to remote sites in your building in no time, and escape the hassles and expense of Ethernet cabling. Your workforce can immediately use your wireless network to access e-mail, file servers, printers, and cable/DSL Internet access.



\$109.00

Websearch Code ...NET218

Netgear MA101

Wireless USB Adaptor

With NETGEAR's MA101 802.11b Wireless USB Adapter you can easily network all of your employees at 11 Mbps speed without installing any new wires. Since the MA101 is USB powered, there is no need to open the case of the PC. Set up a new wireless network or extend your existing workplace to remote sites in your building in no time, and escape the hassles and expense of Ethernet cabling. Your workforce can immediately use your wireless network to access e-mail, file servers, printers, and cable/DSL Internet access.



\$249.00

Websearch Code ...187771

Netgear ME102

Wireless Access Point

NETGEAR's ME102 802.11b Wireless Access Point gives your wireless mobile workforce continuous, high-speed 11 Mbps access to corporate network resources, e-mail and the Internet. It helps you quickly set up a new wireless network office or extend your existing Ethernet network to remote locations in your building without the time or expense of Ethernet cabling.



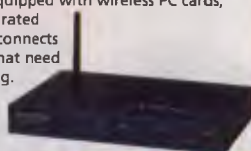
\$549.00

Websearch Code ...NET220

Netgear MR314

Wireless Router

NETGEAR's MR314 Cable/DSL Wireless Router with 4-port switch and access point offers the easiest way to share and extend your high-speed DSL/cable modem Internet connection, either with or without wires. This high performance IEEE 802.11b standards-based router connects all of your PC's equipped with wireless PC cards, while an integrated 4-port switch connects your devices that need Ethernet wiring.



\$619.00

Websearch Code ...NET226

Netgear 10/100 Dual Speed 8 Port Hub (FS108)

Brings the 100 Mbps switching technology and simplifies it for the small office marketplace.

Provides a cost effective way to instantaneously boost network performance while preserving your network infrastructure, including installing cabling and desktop and hardware. Since each port is auto-speed-sensing, installation is plug



and play and each connection can easily be upgraded from 10 to 100 Mbps.

\$239.00

Websearch Code ...NET157

Netgear 10/100 Mbps 5 Port Fast Ethernet Switch (FS105)

Brings the 100 Mbps switching technology and simplifies it for the small office marketplace.

Provides a cost effective way to instantaneously boost network performance while preserving your network infrastructure, including installing cabling and desktop and hardware.

Since each port is auto-speed-sensing, installation is plug and play and each connection can easily be upgraded from 10 to 100 Mbps.



\$169.00

Websearch Code ...BAY169

Netgear RP114

Router

NETGEAR's RP114 Cable/DSL Web Safe Router with 4-port switch provides you with multiple Web content filtering options, plus browsing activity reporting and instant alerts via e-mail. Parents and network administrators can establish restricted access policies based on time-of-day, URL and URL keywords while sharing high-speed cable/DSL Internet access.



\$359.00

Websearch Code ...NET237

Netgear FA311

Network Card

All major operating systems are supported 10/100 Mbps auto-sensing capability Use it in future 3.3-volt PCI systems, and in 5-volt PCI systems. Robust! NETGEAR's single chip design improves the reliability of your network card performance. And you'll be prepared for the future with both 3.3v PCI and low-profile PCI capability no upgrades required.



\$45.00

Websearch Code ...NET214

Netgear PS110

Print Servers

NETGEAR print servers enable you to connect printers to the network for sharing among multiple PCs. Compared to attaching a printer to your PC, the print server gives you more flexibility in placing the printer, more cost effectiveness, better performance, and simultaneous support for Windows, Network, and UNIX printing. The PS104 print server is ideal for a home office with a few PCs. The PS110 is ideal for a small business or small office with a 10 or 100 Mbps network.



\$299.00

Websearch Code ...189999

Netgear PCMCIA Wireless PC Card

NETGEAR's MA401 802.11b Wireless PC Card for notebook computers provides mobile 11 Mbps access to corporate resources, e-mail and the Internet, and quick connectivity without Ethernet cabling. It safeguards your network, and performs with most airport and hotel wireless Internet services, supports.



\$215.00

Websearch Code ...NET219

Netgear R0318

Security Router

NETGEAR's sturdy metal R0318 Cable/DSL Security Router with 8-port switch fully protects your small office network against intrusion. Equipped with Stateful Packet Inspection to prevent Denial of Service (DoS) attacks, and Network Address Translation (NAT) to maintain network security against hackers, it ensures prolonged "up" time and maximized productivity for your network.



\$589.00

Websearch Code ...130735

Netgear GA302T

Gigabit Adapter

Network traffic slowdowns are history once you install NETGEAR's GA302T Copper Gigabit Adapter. It operates at 1000 Mbps using existing Cat 5 networking cables and boosts your connection speed with 2000 Mbps of full-duplex bandwidth over copper wiring. Auto Uplink™ eliminates any need for crossover cables, and optimized drivers, demonstrated functionality within major Windows operating systems, and Plug and Play technology ensure trouble-free setup and performance.



\$189.00

Websearch Code ...189798

Experience the AG Neovo Difference

Only a TFT Flat Panel Display from AG Neovo features the Crystal Optical Filter, both enhancing viewing angles up to 160 degrees and protecting the LCD panel from accidental damage, ensuring you get many years of quality use from your investment.

**AG Neovo F-15 TFT LCD Display**

Looking for the best image quality and style on a conservative budget, you can't go past the AG Neovo F-15 15" TFT LCD Display. With a bright 15" XGA TFT LCD screen and fantastic image quality the F-15 provides sharp images and accurate colour representation. The Neovo F-15 is the perfect display when upgrading your existing CRT monitor.

- Does not have Neovo Crystal Optical Filter
- 15" viewable XGA TFT active matrix LCD screen
- 300:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 140° viewing angles
- OSD menu with one touch auto adjustment
- 3 yr warranty
- Win/Mac

\$1299⁰⁰
 Websearch Code189311

 Hardmart
 \$14.24 per
AG Neovo S-15V TFT Flat Panel Display

Put the highest quality and styling on your desk with this 15" Neovo TFT Display. The S-15V can be connected to a multitude of devices. With XGA, Composite and S-video inputs you can connect to a DVD, VCR, Camera or even the optional Neovo TV Tuner with remote control.

- PC Authority Recommended Award Sept 2001
- 15" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$1799⁰⁰
 Websearch Code189312

 Hardmart
 \$19.72 per
**AG Neovo M-15V TFT Flat Panel Display**

This 15" TFT LCD Display from AG Neovo provides full multimedia capabilities with XGA, S-Video & Composite inputs, stereo speakers and a 4 port USB hub. With Sharp images and accurate colour representation, the Neovo M-15V is your best choice for a multimedia display.

- 15" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 18-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- Stereo Speakers with Audio In/Out
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$1999⁰⁰
 Websearch Code189314
AG Neovo X-174 TFT Flat Panel Display

The AG Neovo X-174 Display provides a generous 17.4" viewable XGA TFT active matrix LCD screen with the highest image quality and styling. Only Neovo have a Crystal Optical filter which will protect your display and your investment from accidental damage to the LCD membrane. With sharp images and accurate colour representation, the Neovo X-174 is the perfect partner for high quality crisp images and sharp text.

- Awarded APC Best Display of 2001 - Nov 2001
- 17.4" viewable XGA TFT active matrix LCD screen
- 400:1 Contrast Ratio
- 16.7 Million Colours 24-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- DVI-D (digital interface)
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$3399⁰⁰
 Websearch Code189313
**AG Neovo S-18 TFT Flat Panel Display**

When quality, performance and price are your only concerns, the S-18 from AG Neovo has it all. Connect via XGA, Composite or S-Video, or for true digital graphics the S-18 features DV/I connectivity. The AG Neovo S-18 Display provides an enormous 18" viewable XGA TFT active matrix LCD screen with the highest of image quality and styling. With sharp images and accurate colour representation the Neovo S-18 is the perfect TFT display for current 20"/21" CRT users.

- 18" viewable XGA TFT active matrix LCD screen
- 300:1 Contrast Ratio
- 16.7 Million Colours 24-bit interface
- 160° viewing angles
- S-Video & Composite inputs
- DVI-D (digital interface)
- OSD menu with one touch auto adjustment
- Neo V Technology (Crystal Optical Filter)
- 3 yr warranty
- Win/Mac

\$3999⁰⁰
 Websearch Code189315

 Hardmart
 \$37.38 per
Wireless RF Neovo Keyboard & Mouse
\$348⁰⁰
 Websearch Code189319
Wall Mount Bracket
\$89⁰⁰
 Websearch Code189316
External TV Tuner Frame with Remote Control
\$398⁰⁰
 Websearch Code189317
Wall/Desk mount ARM with Torsion Control
\$628⁰⁰
 Websearch Code189318

Microsoft Office XP Professional Special Edition



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CorelDRAW 10 Graphics Suite



***Includes BONUS
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only available for PC versions of
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VirusScan 6.0



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AC 97 Sound
480 Watt speakers
Motorola 56K V90 Fax/Voice modem

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64 MB Geforce2 400 MX TV-out
17" LG Flat 24 / 19" Auriga monitor
Creative 5.1 DE Sound Blaster
Cambridge 3-piece SW320 speakers
Motorola 56K V90 Fax/Voice modem

PENTIUM 4 1.7 GHz \$ 2645
PENTIUM 4 1.8 GHz \$ 2745
PENTIUM 4 1.9 GHz \$ 2845

Shop 5-6

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Options
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Printers

CANON BJC 2100+ Scanner	\$160
CANON BJC S400	\$210
CANON BJC S450	\$275
CANON BJC S600	\$345
EPSON STYLUS C60	\$245
EPSON STYLUS C70	\$390
EPSON STYLUS 980	\$650
HP DESKJET 930C	\$220
HP DESKJET 960C	\$425
XEROX Laser Printer P8EX	\$445
XEROX Laser Printer P1210	\$745

Scanners

HP Scan Jet 2200	\$165
HP Scan Jet 4400	\$255
CANON 670U	\$170
CANON 660U	\$260
CANON 1240U	\$275
EPSON 1250 USB	\$230

Software

WINDOWS XP Pro (OEM)	\$315
BRITANNICA STANDARD(OEM)\$	35
M/S WORKSUITE 2001	\$135
M/S SBE XP	
(Word, Excel, Publisher)	\$395
M/S OFFICE Pro (OEM)	\$520
NORTON Anti-Virus 2002	\$ 85
NORTON Personal	
Firewall 2002	\$ 75
NORTON System Works 2002	\$125
Norton PC Anywhere	\$225

Accessories

Logitech Cordless Freedom	
Optical	\$195
Logitech Quick Cam Pro 3000	\$195
PINNACLE Studio PC TV	\$225
PINNACLE Studio On-Line	\$185
PINNACLE Studio Action	\$190
PINNACLE Studio DV Plus	\$480

Options

XP home edition (oem)	\$ 195
Sony 16x DVD ROM	\$ 135
19" Auriga/17" LG flat monitor	\$ 195
Cambridge 3 piece speakers	\$ 65
Seagate 40.1 7200 rpm HDD	\$ 45

XP home edition (oem)	\$ 195
Free Network Quotations	\$ 0
64 MB Geforce2 MX	\$ 45
19" Diamondtron Tube Flat	\$ 0
Seagate 60.1 7200 rpm HDD	\$ 95

XP home edition (oem)	\$ 195
Seagate 80.1 GB 7200	\$ 85
64 MB Geforce3 TI 200	\$ 245
19" Diamondtron Flat/15" LCD	\$ 345
Cambridge 5 piece speakers	\$ 45

AMD SERIES

Upgrade Proposal

Asus A7N/266-E DDR
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connectivity to highest quality speakers
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Sony 1.44 MB Floppy
32 MB Geforce2
5.1 Dolby Digital Audio

AMD Athlon XP 1700 + \$ 1195
AMD Athlon XP 1800 + \$ 1295
AMD Athlon XP 1900 + \$ 1395

XP home edition (oem)	\$ 195
Sony CD RW (40x24x10)	\$ 215
Cambridge SW320 Spkr	\$ 75
17" LG Digital Monitor	\$ 295
64 MB Geforce2 DDR TI	\$ 215

USCT Proposal

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Sony CD Re-Writer (40x24x10)
Sony 16x DVD ROM
Sony 1.44 MB Floppy
Seagate 40.1 GB 7200 rpm HDD
64 MB Geforce2 DDR TI Video card
17" LG Flat 24 / 19" Auriga monitor
Motorola 56K V90 Fax/Voice
Creative 5.1 DE Sound Blaster card
Cambridge 3-piece SW320 speakers

AMD Athlon XP 1700 + \$ 2145
AMD Athlon XP 1800 + \$ 2245
AMD Athlon XP 1900 + \$ 2345

XP home edition (oem)	\$ 195
64 MB Geforce3 TI 200	\$ 245
256 Mb DDR Ram	\$ 165
Cambridge 5 piece speakers	\$ 45
Seagate 60.1 7200 rpm HDD	\$ 85

Dream Machine

Asus A7V/266-E DDR
Samsung 512 DDR RAM
Winfast 64 MB Geforce 3 Titanium 200
17" LG Flat 24 / 19" Auriga monitor
Sony CD Re-Writer (40x24x10)
Sony 16x DVD ROM
Sony 1.44 MB Floppy
Seagate 60.1 GB 7200 rpm HDD
Creative 5.1 DE Sound Blaster card
Cambridge DTT 5300 6-piece speakers
Motorola 56K V90 Fax/Voice modem

AMD Athlon XP 1700 + \$ 2845
AMD Athlon XP 1800 + \$ 2945
AMD Athlon XP 1900 + \$ 3045

XP home edition (oem)	\$ 195
Microsoft SBE (oem)	\$ 395
19" Diamondtron Flat/15" LCD	\$ 345
Seagate 80.1 7200 rpm HDD	\$ 85
Creative Audigy DE	\$ 95

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Some parts carry 1 year manufacturers Warranty. Call WAA on 1300 653 394 to confirm coverage.

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S-Video TV Output
Infrared Port
Windows XP Home Edition



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14.1" XGA TFT Screen
20GB HDD
128MB SDRAM
Windows XP Home Edition



Intel® Pentium® III 1GHz CPU
14.1" XGA TFT Screen
20GB HDD
128MB SDRAM
Windows XP Home Edition



Intel® Pentium® III 1.13GHz CPU
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20GB HDD
128MB SDRAM
Windows XP Home Edition

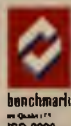


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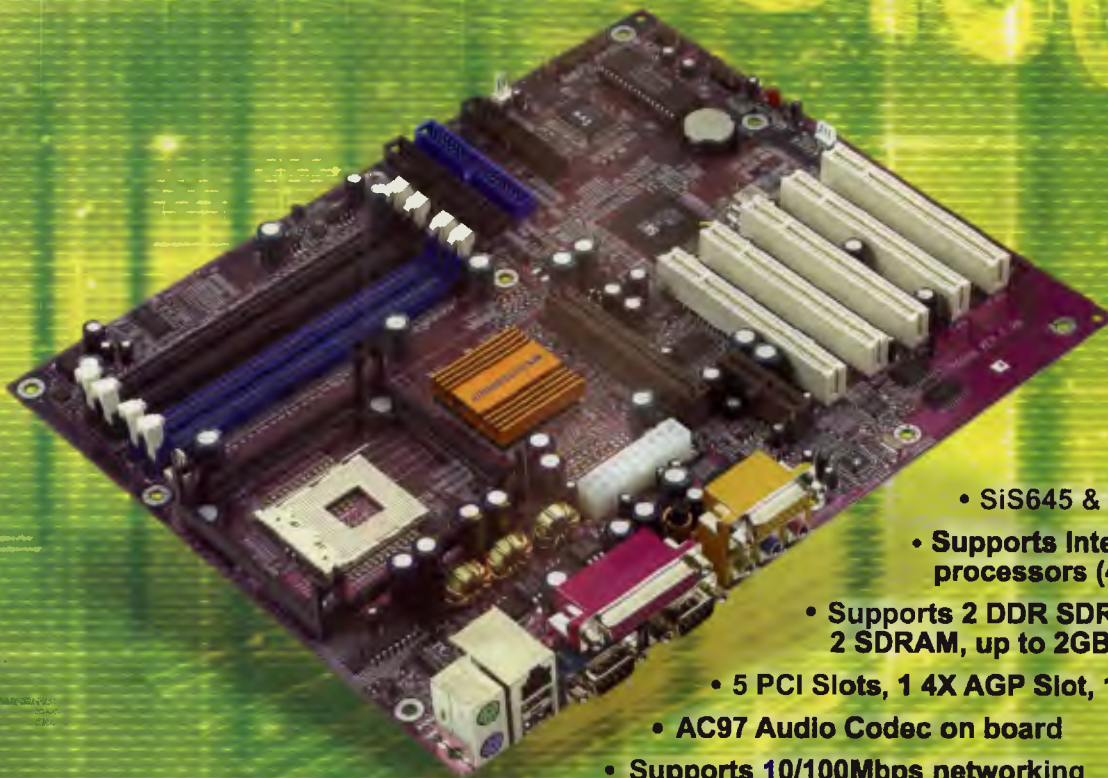
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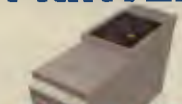
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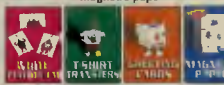
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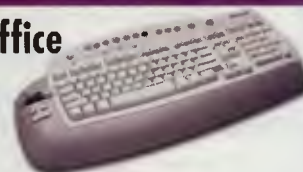
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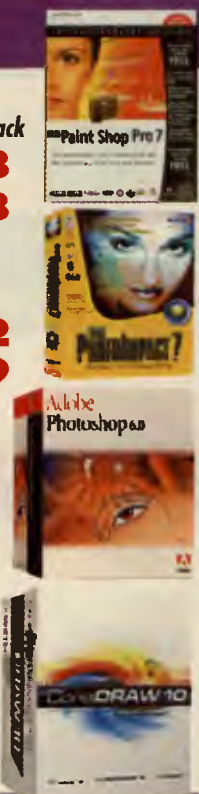
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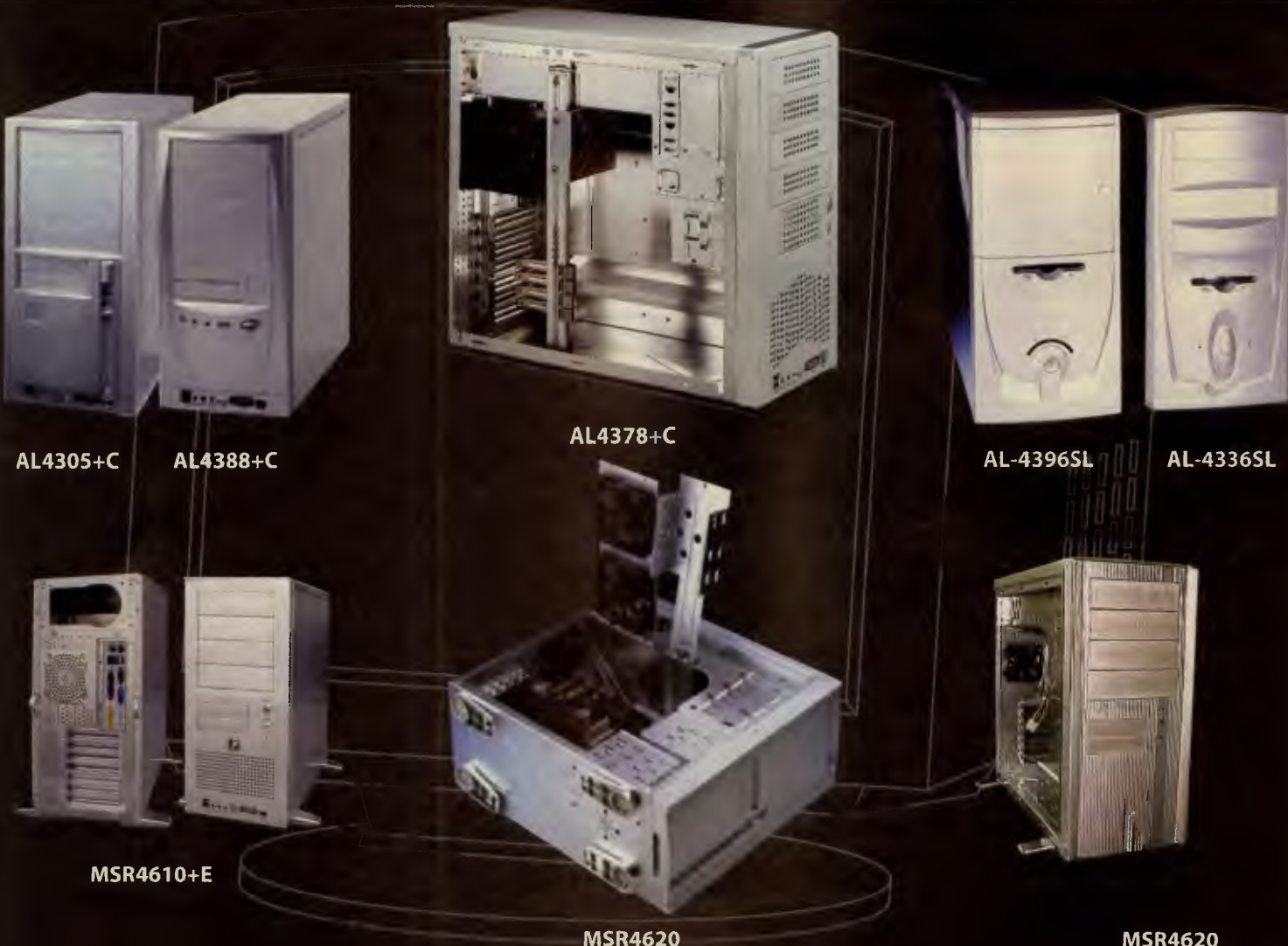


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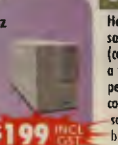
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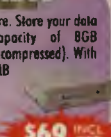
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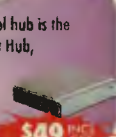
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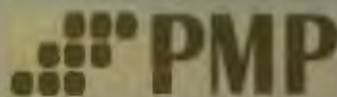
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